THE SIGHT-SAVING REVIEW

March, 1934

"Let There Be Sight"

Volume IV
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Highlights of 1933

WE pause here again to summarize our activities, recapitulate gains, and point to recent trends in the movement for conservation of vision

THE National Society for the Prevention of Blindness entered its second quarter century in 1933. The span of twenty-five years, of course, permitted more spectacular comparisons than the span of a single year. The first quarter of a century has seen:

A 75 per cent reduction in the number of cases of blindness from babies' sore eyes among children entering schools for the blind.

An increase in the number of sight-saving classes, since their establishment in 1913, to 430 in 1933.

A marked increase in the amount of vision testing among school children.

The development of a method for testing the vision of children as young as two years.

The adoption by safety engineers of methods for preventing eye accidents in industry.

A remarkable improvement in lighting, and the invention of a device for measuring light.

Inasmuch as the Society recently presented an historical panorama of its work, this year we sketch only the highlights, stressing the newer aspects as we enter the second quarter century.

CWA Projects Provide Sight Conservation Opportunity

The Civil Works Administration has engaged the services of additional school nurses and personnel who are using eye charts as well as general literature of the Society. Thus far, the Society has definite knowledge of CWA participation in eyesight conserva-

tion activities in Louisiana, Missouri, Nevada, New Jersey, New Mexico and North Carolina. For instance, in Nevada, 25 public health nurses were provided through these auspices; as no funds were available for procuring educational material, the Society furnished the necessary publications for their program.

Eye Hygiene in the Schools

The tendency to incorporate eye health in programs of general health has increased steadily among state health departments and departments of education throughout the United States. These were circularized with a mimeographed outline of "Suggestions for a Program of Eye Health in a School System"; though a comparatively short time has elapsed, a number of states now use this outline as a guide in preparing their health programs. The Society co-operated in the field with nursing, health and educational groups in developing a more adequate service of sight conservation for their communities. For this purpose, Iowa, Nebraska, South Dakota, Wyoming, Nevada, California, Mississippi and North Carolina were visited during the year.

For the first time a staff member is now engaged solely in working with teacher training institutions, to provide adequate information on eye care and hygiene, and to guide classroom teachers toward participation in the school program of sight conservation. With this in view, the Society's representative spends some time in a teachers college or a normal school, studying with the faculty the possibilities for integrating an eye health program into the existing curricula. In demonstrating proper lighting before these groups, she finds a recently perfected portable light meter of great assistance. It is startling to a school principal or school superintendent to find, when this little instrument is placed on his desk, that he is working in three foot-candles of light, when the recommended minimum is ten, and to find that many students in his school suffer the same handicap.

Non-Shatterable Glass

Five states—New York, Pennsylvania, Michigan, Nebraska and Massachusetts—have made it mandatory for automobiles to be provided with non-shatterable glass as a means of safety. In

New York State, the influence of the Society was exerted to bring about passage of the bill and the Society is urging similar action in Iowa, where a bill is under consideration. Non-shatterable glass has also been perfected for use in spectacles; children who need to wear glasses may now enjoy play without hazard to the eyes.

Medical Consultant Services

The Society is very fortunate in having the voluntary services of an ophthalmologist on its Board of Directors to act as special consultant, in order to respond to numerous requests for advice and information of a medical nature.

A Girl Scout Manual in Large Type

Among the sight-saving class pupils in the United States are many who are eligible to be Girl Scouts. The Society and Girl Scouts, Inc., are co-operating in making available for this group the Girl Scout handbook in large type; this will be ready for distribution early in 1934 by the National Equipment Service, Girl Scouts, Inc., 570 Lexington Ave., New York City.

Babies' Sore Eyes

After a bitter fight and defeat which attracted nation-wide attention in 1932, Illinois has passed a law requiring the use of prophylactic drops in the eyes of all newborn babies; Washington, D. C., is considering a revision of its regulations on this subject.

Syphilis as a Cause of Blindness

The campaign against syphilis as a cause of blindness received impetus from resolutions promising support which were passed by the following sections of the American Medical Association: Ophthalmology; Dermatology and Syphilology; Nervous and Mental Diseases; Preventive and Industrial Medicine and Public Health; Pediatrics; and Obstetrics, Gynecology and Abdominal Surgery. Following the passage of these resolutions, the American Social Hygiene Association and the Society adopted as part of their respective programs the active promotion of education for prenatal care of syphilitic mothers. Emphasis is being placed on the need of a blood test for every expectant mother. The American

Medical Association is co-operating by furnishing facilities for enlisting the active interest of the entire medical profession.

Sight-Saving Classes

Despite the fact that special classes were reduced in number or discontinued altogether in many fields of education during the depression, 17 new sight-saving classes were established for school children with seriously defective vision. Through the efforts of local committees and the Board of Education, three sight-saving classes are to be established in Washington, D. C., early in 1934.

Training courses for sight-saving class teachers were given in the summer of 1933 at the University of Chicago, State Teachers College at Buffalo, and Teachers College, Columbia University.

Study of Causes of Blindness

A trial study of the causes of blindness among children in schools for the blind discloses the striking fact that many of these children might gain sight through adequate medical or surgical treatment; measures are being taken to bring them into the sighted world. This analysis of the causes of blindness among children is an undertaking of the Committee on Statistics of the Blind, sponsored jointly by the American Foundation for the Blind and the Society. Examining ophthalmologists serving schools for the blind in several states are co-operating. The first of a series of reports will be published early in 1934.

Medical Social Eye Work

Medical social eye work is a growing field for prevention of blindness. Since the first training course was given in 1931, ten trained medical social eye workers have become actively engaged in some phase of sight conservation—one as far away as Honolulu, Hawaii. At the present time, a course is being given at Washington University Clinics and Allied Hospitals, St. Louis, Mo.

Cross-Eyes

Orthoptic training as a part of the treatment for cross-eyes is gaining more attention. Ten clinics have already been established in six communities. The Committee on Optics and Visual Physi-

ology of the American Medical Association requested the Society to name a committee to study the possibilities of this type of training; this committee is now engaged in getting the consensus of leading ophthalmologists on the subject.

Summary

The Society finds that greater use than ever before is being made of its educational material. The necessity for local organizations to curtail expenses has forced them to call upon the Society for additional amounts of literature; exhibits; slides and films. In fact, it has been found advisable, in some instances, to extend the use of the film, "Preventing Blindness and Saving Sight," for an indefinite period. The SIGHT-SAVING REVIEW continues to serve as a field representative throughout the United States and abroad. For more specific and less formal purposes, the *Sight-Saving Class Exchange* serves the sight-saving class teachers and the medical social service *Bulletin* is circulated to medical social workers. Frequent comment on the Society's work, in newspapers, magazines, medical publications and trade journals, is suggestive of general interest in prevention of blindness activities.

In presenting its highlights for 1933, the Society wishes to emphasize its policy of working with all authentic agencies, for the purposes of economy as well as accomplishment. It acknowledges with gratitude the continued interest of its participants, both those contributing money and those actively engaged in the work.

Vocational Guidance for Children with Defective Vision*

Helen J. Coffin

THE author urges that vocational decisions be postponed as long as possible for children with defective vision; but sight-saving class boys and girls need "educational guidance" to avoid needless courses which may cause a waste of eye energy

Introduction

IT seems like bringing coals to Newcastle to come to Chicago to talk about vocational guidance, which has been so highly developed in the public school system here, and for which it is so well known; but Cleveland has been somewhat of a pioneer in vocational guidance as applied in the special field of sight saving. Mr. Irwin, now director of the American Foundation for the Blind, is responsible in a large measure for this, since he considered it of great importance and engaged a special vocational counselor for sight-saving and Braille classes in 1917, only four years after the first sight-saving class was organized in Cleveland.

In the past sixteen years we have tried to keep abreast of the guidance movement as it has developed; continuously to make adaptations of the general scheme of guidance to the sight-saving class pupils' needs (and adaptations are always necessary with a group which deviates from normal pupils in so important a respect as eyesight); and to make the adjustments in our set-up which have been demanded by current conditions and the uncertainty of the future in this rapidly changing world of ours.

Perhaps I shall express some opinions with which you will not agree, and I may not myself in another year if situations change

* Presented at a meeting of Illinois Sight-Saving Class Teachers, Chicago, Illinois, December 11, 1933.

and facts alter the case; but what I have to offer comes from an initial training in the general field of vocational guidance and much subsequent experience in educational and vocational guidance in the sight-saving field.

Since the guidance movement first started there have been many improvements over the arbitrary manner in which we went about to determine a person's future career, and to say with more or less finality, "Now you must train for and do this or that." There is more attention paid to educational and social guidance, and less determining of the specific vocation for a child before the time of actual placement. We are approaching the whole problem from the learner's point of view. We are developing in boys and girls some responsibility for the wise selection of their life careers by giving them opportunities to know what occupations there are in the world; to know how workers should be fitted by native or acquired abilities to do certain types of work; and to estimate how their own abilities may match the requirements for the kind of work they desire to do. In the junior high schools so-called vocational courses are now considered really as try-out courses, or pre-vocational courses. Specific trade and technical training are generally included only in the curricula of special schools, or senior high schools. We find that specific vocational training is no more profitable for lower grade sight-saving class pupils than it has been found profitable for sighted pupils. I will touch upon vocational training briefly a little later.

Guidance, however, is being emphasized one way or another by all who are concerned in the educational programs of the youth of today; but vocational guidance and placement are an exceedingly baffling problem and especially difficult for the sight-saving workers in times like the present.

I should like to discuss seven or eight points with you, some very briefly, others more fully, as time will permit.

What is Guidance?

You have asked me to speak on vocational guidance, but I cannot divorce vocational guidance from educational guidance. The term "vocational" connotes too narrow a meaning and allows preparation for only a specific job.

I would define guidance as the assistance which is given a pupil to help him to assimilate his school learning and his experience to the end that he may develop an understanding of his capacities; that he may become adjusted to his social and vocational environment; and that he may be better able continuously to make wise decisions in his preparation for and choice of a life career.

The adaptation of a guidance program for sight-saving class boys and girls will be determined by the special problem which is presented by the kinds of boys and girls in sight-saving classes. In the first place, children are placed in the classes because of their individual eye conditions, and many different conditions are represented in one class enrollment. In addition, sight-saving class pupils vary in many other individual traits and aptitudes. The sight-saving class teacher meets a real challenge to her skill and technique in that she has to deal with dull, emotionally unstable, and otherwise physically handicapped children, as well as bright, perfectly balanced, and otherwise physically well children—all in her class because they have certain visual defects.

Sight-saving classes present a cross section of the school enrollment, but the pupils in them cannot be classed for guidance, or any other school work, just because they may have a similar eye defect. The child who is to leave school at 15 or 16 presents one kind of problem in guidance. The high I. Q. child presents another kind of problem. This brings us to another point—the need of guidance for sight-saving class pupils.

All of these pupils need guidance just as much, but no more than any other school pupil. The emphasis is upon the kind of guidance. The average lay person seems to think that each and every sight-saving class boy or girl can be immediately pigeon-holed as far as his life career is concerned by receiving vocational guidance. This can no more be done with these boys and girls than with any others.

My early experience showed me that vocational guidance could not be separated from educational and social guidance and that vocational decisions should be postponed as long as possible. Teachers and counselors cannot determine for a child in the grades, and he cannot decide for himself, at that age, that some particular job will become his life work, especially as job opportunities are

today. We may predict that, according to statistics, a certain number of boys and girls will be found as men and women in certain types of work, but this is generalizing and does not mean that John and Joan will be placed in that work.

Educational Guidance First Consideration

Our first step, therefore, is to emphasize educational guidance. I consider this to be the kind of guidance which sight-saving class boys and girls do need more than sighted pupils, since irreparable damage may be done by the offhand selection of school courses, the learning of which may constitute a great waste of eye energy.

May there not also be a similar waste if the child who leaves school at the minimum age makes the wrong choice of a job? Any child who leaves school at the minimum age is too immature and has too little strength to start out on skilled work. The sight-saving class boy or girl of slow mentality will make just as much of the type of work offered to juveniles as other pupils, given a like opportunity, with special consideration for the eye work required. For the child who can go on in school, actual placement of the pupil whom the teacher may guide is a long way off, and it is through educational guidance that the child learns to be better able continuously to make his own wise decisions concerning his work when the time arrives to leave school, or university.

By whom should guidance be given to sight-saving class pupils? With so many angles and so many types of guidance I want to consider for a moment the question of how and by whom guidance should be offered to the sight-saving class pupil. Many high schools and junior high schools now offer courses in guidance and in vocational information. Some schools offer courses called Personal Regimen. While these latter may not be classed as guidance courses, yet they offer a valuable addition to vocational guidance in that they deal with appearance, office manner, personality, development, etc. Every available course open to the regular class pupil in the school in which a sight-saving class is located may well be considered for the sight-saving class boys and girls. In the *Sight-Saving Class Exchange*, No. 38, November, 1931, Miss Anne Goehring has described the vocational guidance program for a Dayton junior high school, and its application to the sight-saving

class. Since the preparation and the reading for regular class work are presumably done with the sight-saving class teacher, she will have an opportunity to take up the analysis of the occupations studied from the point of view of eyesight requirements.

Vocational Counselor Desirable

In addition to guidance courses, it is desirable that a special vocational counselor be assigned for the sight-saving class pupils. It is only through many contacts with boys and girls and men and women with defective eyesight that the counselor can become thoroughly prepared. In addition to training and experience in this and the general field, the special counselor should have an intimate knowledge of all eye conditions and sight conservation methods.

I realize that at the present time most schools find it impossible to employ a special vocational counselor, and this duty is another of the many which must devolve upon the sight-saving class teacher. Even if she cannot be entirely familiar with the program of guidance and the technique of the trained vocational counselor, she does know the individual pupils and their eye conditions, and can work in close co-operation with the ophthalmologists. With all due respect to the ophthalmologists, they do not always know enough about the pupils' aptitudes, the school curriculum, or occupations, in general, to give the very best educational and vocational advice; but the results of combining the knowledge of doctor and teacher in the advice to the pupil are fairly good, especially in educational guidance.

When a pupil nears the end of his school career, whether it is at the minimum age to leave school or after high school graduation, and the questions of vocational guidance and placement become imminent, here again only those persons familiar with the physiology and hygiene of the eye, and with the pupil's aptitudes and mental rating, should venture to assist the pupil in his choice of a specific line of work. I am emphasizing this for it seems to me that without guidance from the point of view of the ophthalmologist—the expert on the medical side—and the sight-saving class teacher and counselor—the expert on the school and vocational side—the child who has been carefully protected throughout his school career

may be misguided at a most critical time and subsequently waste time and energy needlessly.

Hints for Vocational Guidance

Sight-saving class teachers, facing the needs of their pupils for guidance, both educational and vocational, may be interested in some definite suggestions which have been found helpful to the sight-saving class teacher who is both educational and vocational counselor. Some of these points were talked over at one of our teachers' meetings in Ohio last spring. It is suggested that the following, if they could be put into the hands of teachers, would be valuable to them:

Lists of all occupations of former sight-saving class pupils, obtained by an annual follow-up survey.
An annotated bibliography on guidance and occupations.
A list of all opportunities for guidance, including courses in the junior and senior high schools, in your system.
The teacher should
  Co-operate with established bureaus of guidance, especially in order to keep in touch with the general field, local industrial and business conditions, and possible fields of employment.
  Co-operate with oculists.
In addition, the teacher should have available
  The pupils' P.L.R.'s, or I.Q.'s.
  Records of home conditions.
She should also be acquainted with her pupils' ambitions, and their social and personal limitations.

The teacher should try to keep her rating of her pupils objective rather than subjective. This is important, because a teacher may have a pupil over an unusually long period of years, as is customary in cities having but one or two classes, and she may mistake improvement for ability.

Now from the learner's point of view—how may your sight-saving class pupils learn guidance in a manner applicable to their specific needs? I think this can be done best where regular courses may be interpreted, with the help of the sight-saving class teacher, through a special eye hygiene course. This correlates well with assignments from regular class guidance courses. A course in eye hygiene, including sight conservation, may also constitute one of

the best means of teaching guidance to sight-saving class boys and girls. Through it they may learn what they may do safely at home; what games they may play, both outdoors and indoors; what kinds of jobs they may do in their after-school and summer hours. This gives rise to a discussion of future vocations.

We have been trying to develop a responsibility for the school and community program of sight conservation in our junior high school pupils. In this way the problem becomes impersonal at the same time that it is developing personal responsibility for sight conservation.

Opportunity to Learn from Others' Experiences

As it nears the time for a pupil to leave the sight-saving class, he should know some of the occupations in which former sight-saving class pupils with similar eye defects and abilities—and this is important—have succeeded. At all times due respect must be paid to the pupil's desires and ambitions. If these are contrary to his own best interests, much skill and tact are required to guide him toward other interests. Right here are the times when compromises may sometimes have to be made, and the teacher and counselor must not be too rigid or inflexible.

If a teacher has available both general lists of occupations and also lists of the specific occupations actually engaged in by former sight-saving class boys and girls, she may present these as positive suggestions in order to develop new interests in the boy, or girl, and to ween him from a fixed desire to take up something which is known to be an unsatisfactory career for one with his sight. I have mentioned previously that such lists would be of definite help to the sight-saving class teacher. These may also be referred to by pupils if some of the lists are put into large typewritten copy.

If you desire to be very specific and advise a boy or girl what work to apply for tomorrow, you will have to offer suggestions from those fields of work in the community which are today employing persons of a given sex, age, and ability. If you are merely suggesting a vocation for some subsequent date, consider very carefully the ability of the pupil and all the factors bearing upon his aptitudes and eye restrictions, and consider the permanency of the work along the lines of his ambition.

Everything in industry is so uncertain today that no one can make predictions concerning specific occupations for any of the youth now in school. When fine boys and girls, college men and women, trained professional men and women, as well as common laborers without education, have walked the streets for months without work, how can we plan with any assurance for the specific future jobs for any child now in school?

Guidance as a Part of Training for Life

However, these children must be prepared when opportunity does present itself. Therefore, I suggest that guidance for sight-saving class boys and girls direct them toward a rather general preparation for life. They should have as much school training as they are capable of, and the longer they can put off too narrow specialization the better.

Their training should emphasize the need for alertness, versatility, conservation of health, co-operation with fellow workers, and the ability to make the best of every situation and to seize new opportunities as they arise. If there is any special training, let it be training for occupations which are of a more or less permanent nature, such as work connected with the preparation and serving of foods; some business training leading to indoor or outdoor sales work. If a student is to go to college, majoring in sociology with a view to undertaking social work may be possible for some.

General lists of occupations and job classifications such as may be found in *Occupations—The Vocational Guidance Magazine*, offer good suggestions. For instance, a teacher may rarely have a student who would show a desire or inclination for religious work, but there are certainly some kinds of religious social work into which a person with limited vision might go. For a good many years we have tried to compile the results of questionnaires sent out to our former pupils. Such lists compiled in your local community should be very specifically helpful, both to teacher and pupil.

My final point concerns the development of the whole child since, after all, we must provide for the development of personality as well as the conservation of sight. What, then, are the rights of the sight-saving class pupils in the choice of elective studies and,

finally, in the selection of a career, whether they start out for a job, a position, a profession, or to be just a person about the house?

We have some oculists who are much interested in their own field of work and in the sight-saving classes; but they are also unusually interested in the development of the boy and girl. I quote from one when I say, "We want the child eye-careful, not eye-conscious."

Guidance for Myopes in Sight-Saving Classes

I do not know much about your sight-saving class population in Illinois. In our sight-saving classes in Cleveland we average annually about fifty per cent myopes. These pupils, on the whole, have a better average mentality than do the low vision pupils. At the present time we have four in major work classes. With reasonable care now, the oculists predict that these pupils may go through high school and probably college, if by college age there has been no serious increase in myopia. After this many of the restrictions now imposed in the use of the eyes will be removed and the young men and women may go on in a perfectly normal manner.

Except for knowledge of the physiology and hygiene of the eye, and some knowledge of lighting and the proper use of light, and the practice of methods of doing eye work which, through daily application in sight-saving classes, we expect will become matters of habit, these myopic pupils should be very normal members of any community. They should, therefore, have every opportunity to take courses in school suited to their particular aptitudes and their vocational ambitions. If the latter present a serious conflict between what is eye-safe and what is desired above all else, do we have a right to say "thou shalt not"? After all, we cannot make neurotics out of children to save their sight. We must be very cautious in the use of negatives lest a conflict be built up, and the child develop a sense of inferiority which as an adult he will not be able to overcome.

Oculists pretty much agree that danger of seriously impairing vision in cases of myopia comes before twenty-one. After that age the use of the eyes in a reasonable and sensible way may be quite safe. What myopic pupils can do, therefore, will be deter-

mined by factors other than those of eyesight. They may do many things which other persons of like mentality and ability do.

It is to be hoped that attendance in a sight-saving class, through school years, will have given them knowledge of how to do their work. Of course we cannot know whether or not many famous people who have had myopia would have been better off for sight-saving class methods. Theodore Roosevelt did not become blind, although he was known to be myopic. Others could be cited whose work has made the world better. I have no doubt that success may be an ultimate goal more to be chosen by some than sight. Certainly those persons who are making a great contribution have a right to make their own choice.

Guidance for Other Sight-Saving Class Pupils

I have been talking about fifty per cent of our enrollment. The other fifty per cent of the pupils in the sight-saving classes, who have low vision arising from a variety of causes, present an entirely different problem. Their choice of work is limited largely because of lack of visual acuity, not by the harm which may come from the use of their eyes. They are in more need of vocational training for some specific occupation than are myopes. There are some vocational training courses in the high schools which these pupils may take, and specialized training is desirable for many of them. In some selected cases of slow mentality this is especially needed.

A person with low vision is always at a disadvantage in working with his hands, and the boy or girl who must seek manual employment generally needs more training in order to acquire sufficient manual skill to compete with normally sighted men and women. From this group we are likely to find more recruits to the ranks of the dependent. In such cases it is perhaps justifiable for the counselor or the teacher to be more arbitrary in the courses of studies allowed, and more emphatic in insisting that a pupil not spend time and energy in preparing to be, let us say, a typist, since we know what experience has not yet taught the pupil, that practically every typing position requires transcribing from stenographic notes, or small type. A low vision pupil might see this, but the element of time required to see this, and the nervous fatigue attendant upon the effort, all make this an impossible field

of work in which to earn a living. On the other hand, there may be many children, even in this group, for whom a general course will prove the best means of developing their abilities.

And so, in conclusion, I want to stress the importance of considering each sight-saving class pupil individually. There are many possibilities of work for these boys and girls as well as some impossibilities. The answer to the question, "What can sight-saving class boys and girls do?" is, "A great variety of things depending upon their abilities, industry and personality." They need help and guidance toward making a wise choice and often, but not always, help in securing the actual placement.

Light and Vision *

Preston S. Millar

SCIENTIFIC experiments prove that ocular fatigue and nervous fatigue are greater under conditions of improper illumination. Here is an opportunity to learn about lighting from an expert on the subject

IT is difficult to disassociate light from vision. Light reveals; vision perceives. Where there is no light, there is no vision. Where there is no vision, light is of no avail. There is a mutuality in the problems of the oculist and the lighting specialist that cannot be escaped. I presume that the oculist can do his work more intelligently if he is acquainted with the fundamentals of lighting. And I am very sure the lighting specialist can do his work more effectively if he is acquainted with the characteristics of the eye to which the lighting must cater.

Adequacy of Illumination

First, of course, when thinking of light, is the importance of providing adequate illumination. That is so obvious that it ought not to have to be demonstrated. Yet, peculiarly, in practice it is neglected rather than observed. All over the land people are trying to do visual work with inadequate illumination.

It is probably a common observation that ample illumination makes it possible to read on an eye chart type of smaller size than can be read with somewhat less quantity of light. Similarly, one can perceive motion when there is ample light which escapes notice under lower levels of illumination.

The importance of adequacy of illumination is well established in lighting lore and is supported by experiments in several direc-

* Excerpts from an address presented at the Annual Meeting of the National Society for the Prevention of Blindness, New York, November 24, 1933.

tions. Laboratory investigations have demonstrated that ocular fatigue and nervous fatigue involved in the performance of a given visual task are greater under relatively low levels of illumination than they are when the illumination is adequate. In the industries it has been found repeatedly that when levels of illumination are increased, production of workers is increased and spoilage is diminished. In the lighting of city streets it is established that there is an inverse relationship between the number of traffic accidents and the amount of light provided in the streets at night. As the illumination of the streets increases, traffic accidents diminish. As the illumination of the streets is diminished, traffic accidents become more frequent. Engineers have investigated the economics of this matter with the conclusion that under ordinary circumstances a municipality would be justified economically in spending, say, three times as much money as is customary for street light in order to obtain more adequate illumination. Such additional expenditure would actually effect savings for the community and this is quite aside from all humanitarian aspects of the traffic accident problem.

As a first requisite in lighting which is simple and obvious but widely neglected, it must be set down that an adequate quantity of light must be provided if the illumination is to be satisfactory and visual requirements are to be met.

Glare Avoidance

Sufficient light, however, is not enough. It is necessary to avoid glare. That, again, is thought to be well understood by the public. Everybody thinks he understands what glare is and, of course, knows that he should avoid glare. But, again, in practice, this is an injunction that is flagrantly neglected. Glare is to be found to a degree that causes difficulty in reading and in other ocular occupations throughout the homes of our land.

Take any circumstances in which print can be read easily. If a bright light source is thrown into the field of view, it is impossible or difficult to read letters near the glaring source.

Another type of glare, which is more prevalent and not avoided usually, is specular glare due to reflection of some bright surface or light source from a glossy paper or other work surface. Specular

reflection from an observed surface handicaps vision and occasions ocular discomfort. In reading, very frequently this effect is encountered in a lesser degree where often it is not noticed. But the continued attempt to use the eyes under conditions of specular glare results in fatigue. Whether or not it results in ultimate injury to the eyes, oculists are better fitted to say than I am.

In any piece of visual work it is easy to determine whether or not from this standpoint of glare the reading conditions or working conditions are satisfactory. If through a mirror laid upon the piece of work one can see the reflection of a brilliant source of light or of a brightly lighted surface, there would result from the work surface some specular glare. The mirror test is especially practical in the home where children do studying. If they work at a desk, very often the light source is not properly located or their posture is not right or the light source is not properly diffused. A mirror laid upon the desk top, viewed from the ordinary position of the eyes, will quickly tell whether or not there is any source of glare which is causing disturbance through specular reflection from the page of a book. Once specular glare is identified it is easy to remedy. Changing the location of the light source may obviate the difficulty. The light may be diffused by interposing an opal glass or other diffusing screen. Or the position of the eyes may be changed so that one does not look in a critical direction toward a work surface.

For good results in lighting it is necessary that there be an ample amount of illumination and that there be absence of glare.

Color

When we turn to the field of color, there is opened out to examination a vast new region of great interest in which the characteristics of both light and vision are involved.

Every school child knows in mixing paints that blue-green (minus red), crimson or purple (minus green) and yellow (minus blue) are the primary pigment colors and by mixing these with white paint in suitable proportions a paint of any color can be obtained. He knows that yellow and blue-green pigments mixed will produce green. That, of course, is not an ocular phenomenon in any sense. Speaking in a very general way the blue-green

pigments absorb the reds, oranges and yellows. The yellow pigments absorb the blues and violets. The only rays that are not absorbed by the two kinds of pigments are greens. The green light is reflected. So we say blue and yellow pigments make green.

When it comes, however, to radiant energy which is of those wave lengths that we identify with colors in the visible spectrum, a very different set of primaries is involved. Red, green and blue are the light primaries. Discs of red, green and blue light if caused to overlap produce an approximation of white light. Another way of mixing colors to obtain white is to present the colors in rapid succession to the eye. The eye receives the impression and through persistence of the sensation mixes them to produce a single color impression. If we could get colored papers or fabrics which were substantially pure color, we could with a color wheel show a mixture which would appear quite white. However, available pigmentary colors are by no means pure. Consequently their mixture produces gray instead of white.

The two illustrations, both well known, of radiant energy corresponding with red, green and blue and of the color wheel, are involved with ocular effects. The eye is revealed as a synthesizing instrument presenting one final sensation from the mixture of three hues.

There is a more obscure effect which may be illustrated with the aid of a Benham disk. When the disk is motionless it is seen that half of it is black and the other half is white with some black circular lines drawn on the white portion. When the disk is revolved at an adequate speed it assumes a uniform appearance in so far as the two halves are concerned. Due to the persistence of sensations previously referred to, it appears as a gray disk instead of being half black and half white. Where the black lines on the white field form arcs of circles, revolution produces an appearance as of continuous rings. When the rate of revolution is at a critical slow speed, these rings appear colored variously as red, tan, green and blue. There are no such colors present in the disc, so that the appearance of color is an ocular effect. In this case, seeing is not believing. The reader is referred to books on optics for theories as to the explanation of these effects.

Color Vision

The spectrum of sunlight as seen, for example, in the rainbow is well known. With a prism or a diffraction grating, a beam of white light can be dispersed into its spectral colors for observation. Any red object displayed in the red band of the spectrum, of course, looks red. Placed in the green part of the spectrum it appears black because it would fail to reflect much of the green light. A green object displayed in the green part of the spectrum would

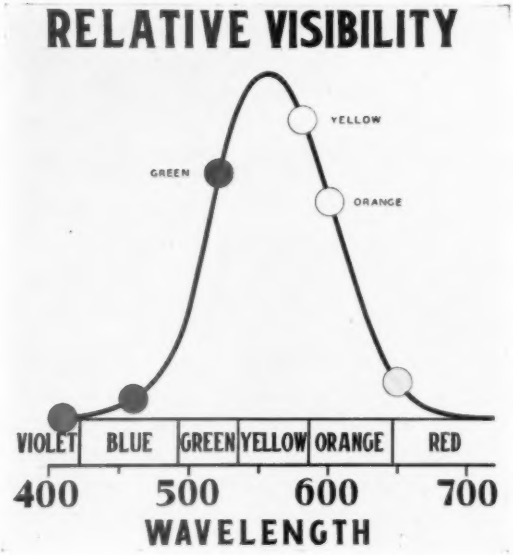

FIGURE 1

be green but in the red part of the spectrum it would look black. A white object displayed in any part of the spectrum would take on the hue of the spectrum itself because a white surface reflects light of all colors. The normal human eye perceives these colors and we take it as a matter of course, rarely thinking about the fact that the eye is being stimulated by radiant energy of various wave lengths and that it is incapable of appreciating the various hues equally well. For radiation of uniform strength throughout

the range of the visible spectrum the intensity of the sensation of light varies about as illustrated in the chart of Fig. 1. The eye must receive many times more radiant energy of wave lengths near the ends of the spectrum, i. e., in the blues and violets and in the reds, than it must receive in the greens and yellows near the middle of the spectrum, in order to experience an equal light sensation. The chart displays what is known as a visibility curve which indicates the relative sensitiveness of the eye to light of different colors as indicated at various parts of the curve.

Reverting to consideration of the spectrum, sunlight and light from the usually employed tungsten filament lamps produce continuous spectra in which the colors merge gradually from one to another without interruption of continuity. There are other light sources, however, which produce light having a banded spectrum. The energy from such sources is concentrated at certain wave lengths. Thus the mercury vapor lamp radiates principally at isolated points in the green, yellow and deep blue. The sodium lamp, newest of artificial illuminants, concentrates its radiation in one band of yellow light.

Much as red, green and blue light may be mixed to produce white, so with commercial illuminants manufacturers may combine light sources of distinctive colors in such a way as to produce synthetic light of a different quality. In such practice, gaseous discharge tubes of the types used in signs are commonly utilized. These produce banded spectra and may be combined to produce light which appears to the eye to be white but which is not a true white light suitable, for example, for color matching purposes. Such a combination can be obtained by the use of neon to add red to the mercury light, and thus produce a light which seems white to the eye, which is not an analytical instrument but which discloses on instrumental analysis large gaps in the spectrum which may distort certain colors.

It is well known that the color appearance of objects depends largely upon the color of the light by which they are illuminated. Not infrequently purchases of colored fabrics have proved unsatisfactory because they were purchased under light of a hue different from that under which they were used. A more radical difference in color of light than customarily is encountered when dealing with

FABRIC COLOR UNDER DIFFERENT QUALITIES OF LIGHT

MERCURY | MERCURY PLUS NEON | TUNGSTEN | SODIUM

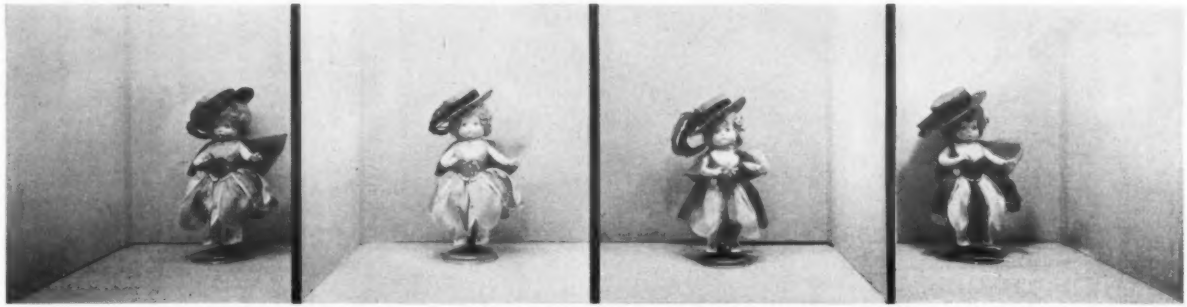

FIG. 2.—PANCHROMATIC PHOTOGRAPHS OF DOLLS GARBED SIMILARLY IN VIVIDLY COLORED COSTUMES AND DISPLAYED IN ILLUMINATION FROM VARIOUS LIGHT SOURCES

Seen under the light of Tungsten filament lamps, which are our most common illuminants, one of the dolls appears as a rosy-cheeked, blue-eyed, flaxen-haired damsel. The hat is of a vivid green, trimmed with one green feather, a black ribbon, and one black feather. The bodice is of orange, partly covered with grayish-blue material. The cape is of green, lined with red, and the skirt is of alternate panels of orange and grayish blue.

Seen next under the light from a combination of mercury and neon tubes, the doll herself does not look conspicuously different. The greens in the costume appear of a lighter tint; the reds are not quite so vivid; the oranges seem more yellow and the blues tend toward the violet. In some respects the difference observed under this combination of mercury and neon light sources is equivalent to that experienced under daylight. In other respects the rendition of colors is of a different character.

Seen under the light of the mercury vapor tube, all reds are gone. The doll is pallid and anemic of complexion; the flaxen hair is a grayish yellow. The greens are green, but of a lighter tint; the orange becomes yellow; the reds become brown, almost black and the grayish-blue is violet.

Seen under the light of the sodium lamp, the complexion is still more distressful, lacking all red tints; the hair becomes tawny; the greens appear as browns; the reds as burnt-orange; the blues become brown and the oranges become yellow.

fabrics is illustrated in Fig. 2. This indicates something of the appearance of dolls arrayed in colored fabrics when seen under lights of different colors. These differences are attributable to physical characteristics of the light and of the fabrics rather than to ocular effects.

Another effect, which is physical rather than physiological in character, is illustrated in Fig. 3, which has to do with ultra-violet

FIG. 3.—ULTRA-VIOLETS

Artificial violets photographed by Tungsten light

Artificial violets photographed by invisible ultra-violet radiation showing fluorescence of flowers and vase

radiation. Radiation of those wave lengths which are shorter than the shortest wave lengths of radiation which is perceptible as light produces no ocular sensation. When, however, fluorescent objects are irradiated they glow with a color value dependent on the fluorescent material. Fig. 3 shows two photographs of artificial violets to which fluorescent material has been applied. At the left they are illuminated by ordinary artificial light. At the right there is an indication of their appearance when irradiated by

invisible ultra-violet radiation. If it were not that the vase is of fluorescent glass and that the violets have been coated with fluorescent material, the photograph at the right would appear a black blank space. Both being fluorescent, however, they glow vividly and it has been suggested irreverently that they may be designated as "ultra-violets."

Langdon Davies in his book, *Man and His Universe*, has alluded to the popular conception that the typical scientist is devoid of all appreciation of the esthetic. He is thought to be as hard and cold and material as the facts with which he deals. This, Langdon Davies argues, is a misconception. He asserts that the scientific man can derive esthetic enjoyment and enduring satisfaction from the discovery of a new fact which can be added to the body of human knowledge and this is particularly the case if the fact can be applied to the advancement of the welfare of the people.

Preventing Blindness Through Social Hygiene Co-operation*

Lewis H. Carris

GREATER frankness in discussing the problem of syphilis may help to reduce this disease which is now the cause of approximately fifteen to twenty per cent of blindness

THERE is no part of the body that is immune to the savage attacks and ultimate destruction brought about by venereal disease. The internal organs—heart, liver, lungs, kidneys—the organs of sense—sight, hearing, smell—the skin and internal membranes, the glands, and the nervous system and brain—all may be subject to attack by syphilis or gonorrhea. We confine this discussion to the physical effects of syphilis and gonorrhea upon the organ of sight, for two reasons: first, because, of the common secondary points of attack of venereal disease, the eyes and the sense of sight are frequently and pointedly affected; second, since venereal disease is estimated to cause one-third of all blindness in children,† it becomes a most important problem, not only to those of us who are concerned with the prevention of blindness, but to those who must consider the family unity and the family welfare.

There can be little originality or novelty, at this date, in the exposition of the relationship between venereal disease and the eyes. The subject has been discussed from the medical point of view, from the social point of view, from the educational angle, from the public health angle. During the past twenty years, much has been said and written on this subject. Yet the very fact

* Presented at the Regional Conference on Social Hygiene given under the auspices of the Social Hygiene Council of New York, January 24, 1934.

† Causes of Blindness in Youth, as Determined at the Missouri School for the Blind, H. D. Lamb, M.D., Missouri State Medical Journal, March, 1926.

of the repetition of this relationship between venereal disease and the eyes stresses the need of discussing once more the facts of venereal disease as they relate to eye conditions.

Historical Theories on Ophthalmia Neonatorum

Although the venereal disease problem is as old as life itself, yet it is of very recent date that we have had definite proof of the very close and extremely dangerous connection between the eyes and venereal disease. One hundred and fifty odd years ago, a German physician, Quellmaltz, pointed out a possible connection between the strange malady known as "babies' sore eyes" and the discharge present in the birth canal of the mother. After many years, in 1808, Dr. Gibson, an Englishman, quietly repeated this observation, and added that with proper care in cleansing the maternal passages and in wiping the baby's eyes free of mucus after birth, much might be done to prevent the occurrence of this infection which so discouragingly and so frequently led to lifelong blindness. Had Gibson lived a hundred years later, he might have met with the honor of a prophet, but his colleagues of his own time paid little or no attention to his observation. They explained to the distressed mothers of babies who had lost their sight in this way that it was caused by a peculiar constitution of the atmosphere; by an unbalanced condition of the alimentary canal; by cold drafts or the sudden change the child underwent in coming into a chilly world. So thorough was the belief in the causal rôle of cold, that the Spanish Cortes, in 1837, decreed that all babies be baptised with warm water, since the cold water commonly employed was so often followed by sore eyes and, in many cases, by blindness.

It was a German obstetrician, Karl Siegmund Franz Crédé, who, in 1880, found that by instilling a drop of strong germicide, in this case a silver nitrate solution, into the eyes of every baby born to every mother, the cases of infection dropped from ten per cent to one per cent or less among the babies born in his hospital. Neisser, at nearly the same time, proved what many earlier seekers suspected—that in the discharges of the birth canal lurked the germ of gonorrhea, the same germ that caused, in six cases out of ten, the dreaded babies' sore eyes.

Some refinements have been added to the prophylactic treatment of newborn babies' eyes since Crédé's simple technique was put before a rather doubting world. But the principle has not deviated: the baby of every mother should receive the drops of silver nitrate—or an equally effective prophylactic—to prevent the possibility of an infection that might lead to blindness.

Progress in Prophylactic Measures Against Babies' Sore Eyes

In the past twenty-five years, the progress in preventing babies' sore eyes and in reducing this prolific source of preventable blindness has been gratifying. In 1908, twenty-seven per cent of the children entering the schools for the blind were there because of this infantile blindness. The determination of a group of people—among whom might be mentioned Dr. Park Lewis of Buffalo, who sought the facilities of the great medical network of the American Medical Association, and Miss Louisa Lee Schuyler, who helped to organize the New York State Committee for the Prevention of Blindness (since grown into the National Society for the Prevention of Blindness)—helped to promote the demand on the part of the public that every baby have the protection of these drops. The result of this concerted effort upon the part of doctors, public health workers, and persons of social responsibility is reflected in the figures for those now entering schools for the blind. In 1932, of children who were blind, only seven per cent became so through the once terrible scourge of ophthalmia neonatorum.

Syphilis, a Thief of Sight

Unlike the gonorrheal infection, syphilis is a more subtle thief of sight. When the disease is contracted by an adult, unless proper treatment is instituted early and carried on thoroughly, months or years after the first symptoms have disappeared, eye involvements may show themselves under many different guises. A list of possible eye manifestations of syphilis—acute iritis, inflammation of the vitreous body, diffuse keratitis, neuroretinitis, choroiditis disseminata, gummata in the choroid, optic neuritis, serpiginous choroiditis, aquo-capsulitis—is more confusing than impressive to the layman. These eye manifestations,

leading to greatly impaired vision and possibly to blindness, are among the commonest results of syphilis.

Syphilis, a disease which, in spite of the many laws requiring its reporting, is not yet under control even by the statisticians, is probably more prevalent in this country than any infectious disease except measles; according to Stokes, it attacks one in seven to ten persons. It is one of the greatest causes of death, in one form or another, and the cause, as nearly as statistics are able to tell us, of approximately fifteen to twenty per cent of blindness.*

Syphilis is of two types—the acquired and the so-called prenatal syphilis. The sociological implications of the latter are of special moment, since the transmitting of this disease with all of its latent and possible infirmities, attacks those who are unable to defend themselves, and deprives them, even before birth, of the opportunity to pursue the health, wealth, and happiness which is rightfully theirs.

The tragedy of the child who is born with syphilis is manifold. It is conservatively estimated that three out of every thousand babies die in infancy or early childhood because of syphilitic infection. This does not count the numbers of stillbirths traceable to syphilis. But their lot is perhaps easier than those who live with this pending disaster in their blood. In a series of syphilitic children between the ages of four and eighteen, eye lesions were found in all but 22 per cent of them; 52 per cent had interstitial keratitis, an involvement that may take away a large degree of vision when it does not blind; 26 per cent had other eye involvements. Optic atrophy, now a leading cause of blindness among children in schools for the blind, is frequently a result of congenital syphilis. The resultant loss in human suffering and distress, in economic waste, and governmental expense in providing homes for the blind, and special classes for those with seriously impaired vision may well be imagined.

We have learned a great deal about syphilis since, many authorities believe, it first spread like wildfire over the face of the civilized world at the end of the fifteenth and beginning of the sixteenth

* Blindness in Hamilton County (Ohio), Studies from the Helen S. Trounstine Foundation, Vol. I, No. 3, Sept. 1, 1918, and Proceedings of the 1926 Annual Conference of the National Society for the Prevention of Blindness, H. D. Lamb, p. 23.

centuries. Its virulence was so great that it nearly overwhelmed a population not partially immunized, as we are today, to its first onslaught. The history of medicine from the end of the fifteenth century through the end of the eighteenth was rife with theories, cures, speculations and methods of treating the "French pocks," the "Spanish disease," or the "Italian pox," as it was variously called. The nineteenth century gave us the first great syphilologists, Ricord and his pupils, who wrote a large part of that which we now know of the clinical manifestations of this disease; not until Schaudinn, a German physician, suddenly found in 1905 the germ that others had been seeking for a score of years, did our knowledge of syphilis materially increase beyond that of Ricord and many of the earlier students of this disease.

Following the isolation of the spirochete, Ehrlich found the "magic bullet," 606, that would kill this destroyer of bodies and senses; Wassermann developed a blood test that shows syphilitic infection even in its early stages; and the study of syphilis was given renewed impetus.

Prenatal Syphilis

The seriousness of the effects of syphilis may be more acutely appreciated by tracing a typical transmission of the disease.

A young Canadian woman married some twenty years ago. Two daughters, born of the marriage, were recently brought to an eye clinic for diagnosis. The older, now a fine looking girl of eighteen, is nearly blind because of optic atrophy, and there is no hope of saving her sight. The younger girl of sixteen has seriously impaired vision, the result of interstitial keratitis, but with prompt care her sight may be preserved at its present level. Syphilis, acquired before birth, accounts for both these cases. Unaware of her infection acquired from her husband, the mother had communicated the disease to her unborn children.

Syphilis, despite the misleading term "heredosyphilis," is not an hereditary disease, but is acquired by the unborn child during the period of gestation. No mother can give what she hasn't got; no child "inherits" syphilis whose mother did not have the disease at the time of her pregnancy. How fortunate this is for the child yet unborn! When a prospective mother is known to have syphilis,

it has been demonstrated that treatments begun sufficiently early in the period of gestation will inhibit and prevent the development of the disease in the unborn child. What must be determined, however, is which mothers need treatment.

Knowing the great damage that syphilis does in the second generation, realizing the frightful toll of neonatal deaths and stillbirths caused by this destroyer of babies, realizing further that three out of every hundred babies born are syphilitic and live to suffer the impairment of sight, hearing, motor centers, or one or more of the many other afflictions which ride in the path of heredosyphilis, the sections on Ophthalmology, Dermatology and Syphilology, Nervous and Mental Diseases, Pediatrics, Obstetrics, Gynecology and Abdominal Surgery, and Preventive and Industrial Medicine and Public Health presented the following resolution to their members and to the House of Delegates of the American Medical Association:

WHEREAS, Heredosyphilis or congenital syphilis is responsible, among its other adverse effects, for interstitial keratitis and for many uveal and neural changes resulting in defective sight and blindness, and,

WHEREAS, Heredosyphilis through the early and effective treatment of the infected pregnant woman is a preventable disease, and if treated in the child before organic changes have occurred is curable, and,

WHEREAS, It has been found that an average of 8 to 10 per cent of women in prenatal clinics have positive Wassermanns, in various clinics the figures ranging from 3 to 30 per cent, and it has been estimated on the basis of group studies that 2 per cent of children taken in the mass and a considerably larger proportion of those under one year of age have heredosyphilis and that about half of these children without adequate treatment develop interstitial keratitis leading to defective vision if not blindness, and,

WHEREAS, This deplorable condition can be controlled only by the combined efforts of the medical, the social and public health authorities, therefore be it

Resolved, That the [State and Provincial Health Authorities of North America] request the House of Delegates of the American Medical Association to appoint a committee to take this subject under advisement and to arrange methods by which co-operation may be secured through the combined efforts of the National Society for the Prevention of Blindness, the American Social

Hygiene Association, and professional societies of the syphilologists, obstetricians, ophthalmologists, public health organizations, and such other organizations as can help, in order that blood examinations may be made of all pregnant women so that methods may be arranged for the treatment of all those infected with syphilis, thereby preventing the blindness and other tragedies which would otherwise inevitably follow.

The plan of action decided upon by the Board of Trustees of the American Medical Association is outlined by Dr. West, secretary of that body. "The American Medical Association is to use the facilities at its command for the purpose of enlisting the interest of the medical profession in the movement to reduce the prevalence of hereditary syphilis. Through editorials in the Association's publications, and through scientific papers dealing with various phases of the general subject under consideration, an effort will be made to disseminate helpful information for the benefit of the members of the medical profession."

Prevention of Prenatal Syphilis a Broad Undertaking

The history of the partial conquering of the infection of newborn babies' eyes, ophthalmia neonatorum, may be repeated in this new campaign against congenital syphilis; when Crédé began to protect the eyes of the babies born in his Leipzig hospital, he sought first to treat the eyes of all those whose mothers showed clinical symptoms of gonorrhea; this reduced the number of cases to some extent, but not enough. Not until he treated the eyes of every baby of every mother did his results show that the infection was finally and definitely conquerable. Not until every mother, rich and poor, young and old, friend and stranger, has a blood test as part of her prenatal examination, shall we be able to prevent the carrying on of syphilis to the second generation. Medical initiative and public demand together will reach the point at which we aim: to give every baby a chance to be born sound and healthy and free from taint.

We are glad to say that already great progress has been made in this respect in the clinics of most hospitals in New York City; in almost all good obstetrical and prenatal clinics, a routine blood test is made on every patient. And it is of special interest to us

who would increase the numbers of mothers seeking early and complete prenatal supervision that Mayor La Guardia has recently loosened the hospital department regulation that ruled if a woman had already had prenatal examination and advice, she might not be admitted as a city patient to the maternity wards of private hospitals, since foreseen maternity did not constitute an "emergency."

From the point of view of a health education and eyesight conservation agency, we have some reason to point with pride to the fall in the figures for the incidence of ophthalmia neonatorum; we may, ten or fifteen years from now, be able to show an equally great decrease in the number of children in schools for the blind, there because of syphilitic lesions. But the wider view of the problem shows us to be mopping up the floor without turning off the overflowing spigot.

Despite our knowledge, and the widespread application of it, that ophthalmia neonatorum is entirely preventable, seven out of every hundred children in schools for the blind did not profit from it. The amount of reduction which was so marked at the beginning of the campaign twenty-five years ago becomes less and less each year. Not until the wider problem of the prevention of the spread of venereal disease is included in the efforts, not of any one organization, but as a community, a state, a national and world-wide undertaking, shall we find an assurance of the ultimate wiping out of these diseases.

In this state, the need for medical attention is well recognized. Venereal diseases are reportable diseases, although they are, unfortunately, not reported fully. Free clinical care, free diagnostic service, free medicines, are provided for those who cannot pay for them. The great hazards which lurked in the activities of quack doctor and quack medicine, are being dealt with by the authorities. The social responsibility for seeing that disease in one member of a family is treated does not end with that one patient; we are aware, and medical social workers are aware, of the need of proving conclusively that no other member of that family is similarly affected.

Medically, legally, socially, we are building our fences with care to prevent the greater onslaught and spread of these diseases.

But as a community, responsible for the education and guiding of the ideals and modes of living of the young, we must help to circumvent the social reasons for the continued spread of venereal disease. We must take the onus of morality and shame out of the social disease question, and air it in the wholesomeness of public light. From the medical point of view, the conquest of venereal disease offers no greater problems than the overcoming of smallpox, of diphtheria, of tuberculosis, provided modern knowledge can be applied.

The Medical Social Eye Worker and the Community*

Ruth E. Lewis

MEDICAL social workers have direct opportunities for doing positive preventive work. Visits to the homes of patients often reveal inadequate lighting, for instance, or the social worker may suggest a better balanced diet for the family

THE medical social worker in the eye clinic of a general hospital or out-patient department touches the community in the interests of prevention of blindness through three phases of her work; first, through social case work participation in the care of selected patients with discovered pathological eye conditions; second, through her clinic teaching of a larger group regarding the nature, cause, and treatment of their conditions; and, third, through the exertion of her influence as a member of the community and one conversant with the need of the development of better facilities for the protection and care of the eyes of its members.

Social Factors in Eye Health

Much has already been written of the function of the medical social worker in the medical care of all patients, irrespective of their diagnosis. The discovery of social factors regarding the eye patient which might have some bearing on the etiology or progress of his disease would seem to have as much potential value as in other clinical pictures. For instance, the nutritional history of the

* Presented at a luncheon meeting on "Medical Social Eye Service in Relation to the Community," given under the auspices of the National Society for the Prevention of Blindness, with the co-operation of the North Atlantic District of the American Association of Hospital Social Workers, the Medical Social Service Section of the Welfare Council of New York City and the Department for Prevention of Blindness of the New York State Commission for the Blind, in New York, November 25, 1933.

child who is suspected of having xerophthalmia may be of great importance in relation to early instigation of treatment. The work of Yudkin of Yale in producing cataracts in animals by vitamin G deficiency, although the relationship has not been conclusively proved in man, is another indication of the possible correlation of social and medical factors, and of the need of going more fully into the food habits of our patients. It has been said by some ophthalmologists, at least, that the stresses of the emotional life of the patient with simple, non-congestive glaucoma have or may have some etiological significance.

Very little has been done so far to study any group fully enough from the social angle in collaboration with an ophthalmologist for one to speak with any assurance of the etiological value of social information in general. However, significant social information may help in the understanding of the person as a human being and may serve as a guide to the doctor in his management of the patient. The impression of the onset of the disease and its previous treatment upon the mind and feelings of the patient, the fears regarding the disease and its care, the responsibilities which he has and must continue to bear, may help to determine to a certain extent the medical recommendations which are given, the way in which they are expressed, and, to even a greater degree, determine the statements regarding the outcome.

Relationship Between Patient and Worker

After considering the whole medical situation with the physician, the social worker has an opportunity, at the beginning of the treatment, for supplementing instruction and interpretation, and helping to establish a relationship between the patient and the clinic which will insure the patient's carrying through treatment. Follow-up, used now in a broader sense than when applied to various mechanical systems for reminding the patient when he should return, may be considered to start here. Some of the studies which have been made in the last few years in measuring the results of various systems show that though there will usually be, if there are not too many other factors outside the case worker's control, decided improvement in the percentage of the patients who carry through the treatment advised with what has been

called a "tag along" system, the substitution of a planned program of interpretation, adapted to the needs of the individual and beginning at the time of the first visit, will increase the percentage of completed treatments still further.

This relationship and the patient's understanding of his needs will help to bring to the attention of the worker possible obstacles to the continuance of the desired type of treatment. They may be found within the patient's own reaction to his situation; on the economic side, they may threaten the securing of adequate medical care. At the same time, the misconceptions and prejudices of those about the patient may raise questions in his mind. In her attempts to help the patient find a way to face and meet his situation in its totality the social worker is making possible the medical treatment which may definitely prevent blindness.

Social Eye Worker—Initiator and Integrator

These case work adjustments bring the worker in contact with all the other organizations of the community interested in the prevention of blindness, and, more especially, with many who have unrecognized opportunities for doing something in this field. The social worker here may be only the integrator, or she may be the initiator, of interest. Securing the child's school report becomes an occasion for discussing the relationship of poor vision to retardation in school and the opportunity which the school has for safeguarding the eyes of the children through proper lighting, arrangement of desks, blackboards, etc. Although this may be secondary to the adjustment of an individual child, the importance of the old, and perhaps familiar, injunctions regarding these points seems to increase because of their significance in the life of a real child. The interpretation of the need of a particular child for sight-saving class opportunities may create the first interest in the possibilities of establishing a class. The social worker who has followed a child with progressive malignant myopia during her days in a sight-saving class, only to discover that, upon entering high school, she is registered in a business course which involves doing very fine work, will have at hand good evidence of the need of vocational counsel and more exchange of information and advice between the schools.

The employment problems, especially, bring the social worker in touch with a non-medical group not very familiar with eye difficulties, and present a challenge which a medical social worker has a special responsibility in meeting because she is closer to the sources of medical knowledge, and at the same time is acutely aware of the social implications. Until more can be determined about the extent of the visual handicap in terms of limitation of activities, placement, except on a trial and error basis, is impossible. The large numbers of patients going through clinics should make possible the study of visual efficiency of a fairly homogeneous group as far as intelligence, extent of visual field, etc., are concerned. This knowledge of visual capacity in terms of every-day activities should help to avoid the discouragement of the visually handicapped which results when they are sent to try one job after another, only to find that because of their defective vision they cannot satisfy the employer, and to avoid, as well, in some instances, a return to conditions which might be damaging to sight.

Medical Social Eye Worker an Interpreter

In these days, when so many hospital patients are the clients of relief agencies, the majority of these adjustments are the responsibility of the non-medical worker who has a right to feel she may depend upon the worker in the eye clinic for instruction and guidance in the medical aspects of the situation. It is here, probably, that the social worker becomes an interpreter. The reports to the other workers should give them an understanding of the patient's condition, the treatment, and prognosis, and it is hoped that the information may help in the care of other clients as well as in that of the specific patient. The following reports might serve such a purpose:

Mrs. Grace Smith,
Intake Department,
Provident Association,
St. Louis, Mo.

My dear Mrs. Smith:

As you know from my telephone conversation, George has been under treatment in the eye clinic since September 14 of this year for a phlyctenular keratitis of both eyes. This is a manifestation

of his general physical condition. It may be a response to an infection in some other part of the body or the result of a generally lowered resistance; in the latter connection the condition has often proved to be pre-tuberculous.

The conjunctiva—the thin membrane which lines the eyelid and covers the exterior of the eyeball, with the exception of the central portion—becomes red and small, and ulcer-like nodules, known as phlyctenules, appear. There is a loss of surface on each of these phlyctenules and, as a result, scar tissue is formed in the healing process. When these phlyctenules are on the cornea, vision is impaired. As you know, the cornea is the clear, front part of the eye which has been superimposed for the same purpose, and in the same manner, as a watch crystal. Its purpose is to protect the interior of the eye and yet to admit light. When these phlyctenules appear on the cornea and heal, leaving opaque scar tissue, you can see that they may affect vision. This, of course, is the most serious manifestation. When the cornea is thus involved, the patient makes every effort to shield his eyes from the light. There is a large amount of tearing and frequently the skin around the eyes becomes affected.

The treatment for this condition is both general and local. The general treatment consists of a high caloric diet, including whole milk, fresh vegetables, butter; exercise in the sunlight (the direct exposure to which is most important) and regular elimination, etc. The local treatment consists of eye drops which help to keep the rest of the eye from being involved in the infection, and the use of dark glasses to shield the eyes from the sunlight which is so necessary a part of treatment.

When Mrs. Jones had George in the clinic on September 28, she reported that she had received her grocery order from you the day previously, and that on that day she had fed him as she had been instructed. She evidently was doing an excellent job, for when she brought him back to the clinic on October 5, he was tremendously improved, so much so that his doctor remarked upon it again and again.

It is necessary, of course, to continue this régime which has been started, since the condition is one which is prone to recur if the treatment is not carried to the point of a generally improved condition. In fact, George did have one such episode as this in November, 1930, and, as a result of that incident, does have some small corneal scars. It is impossible for the doctor to say at this time how much permanent impairment of vision there will be because the scars do have a tendency both to thin and to shrink with time. It is thought, however, that the visual impairment

will be comparatively slight, since one of the eyes is practically unaffected.

In addition to these more objective elements of treatment, it is well to give some consideration to the effect it may have upon the child's relationship in the family, and to the whole emotional content both for him and the other members. It is quite evident that his daily routine is greatly affected and that he must be singled out for much solicitous attention. These aspects will be of varying significance, of course, depending upon the pattern of relationship which is found in this particular family.

If you or the family have any questions, I shall be glad to have you get in touch with me.

Very truly yours,
Social Worker, Eye Service.

Mrs. Priscilla Oakes,
St. Louis Provident Association,
St. Louis, Mo.

My dear Mrs. Oakes:

Although the doctor and I both talked with Miss Kenwood on the two occasions she had Rosella in the clinic for examination, she indicated that she would like very much to have us report to you in writing. Since it appears from Rosella's condition that she will need constant observation and treatment, there will be great advantage to both of us in working together as closely as possible.

As Dr. A. told Miss Kenwood, Rosella has what is known as malignant myopia. This is an extreme case of nearsightedness which has a tendency to become gradually worse, cutting down the vision as it progresses. Medical authorities do not agree exactly on just what causes these high degrees of nearsightedness nor what it is that makes them become worse and worse. Rosella's doctor, however, thinks that the condition is closely tied up with her general health and nutrition. Perhaps because of some systemic condition, perhaps for some other reason, the sclera, which is the tough outer coat of the eyeball which helps it to hold its shape, has become weakened in these cases and it tends to stretch and stretch. As it stretches, the eyeball becomes deeper and the light rays entering the eye are thrown into poorer and poorer focus. As the condition progresses, certain changes take place within the eye itself which add to its degeneration.

It appears from Rosella's examination that her condition has progressed considerably since her present glasses were ordered by Dr. A., and that her condition is in a rather rapid state of change and needs the most careful treatment. The new glasses which were

ordered today improve Rosella's vision from being less than 5 per cent of normal to 85 per cent of normal. This is, of course, a tremendous improvement, and if we could feel at all sure that Rosella would be assured of maintaining her present amount of sight, her eyes would not be a problem. Since, however, judging from the past, it seems quite likely that the vision may become much worse, our doctor is recommending placement in the sight conservation class at the Cupples School. We gave the application blank for this admission to Miss Kenwood and suggested that it be presented to the Blossom School, which is the regular public school in your district, and the principal there will then arrange for Rosella's admission to Cupples.

In addition to admission to the sight conservation class, the physician recommends that Rosella have cod-liver oil at least twice daily and some medicine, the prescription for which I am enclosing. One tablespoonful is to be dissolved in a cup of milk and taken daily. The purpose of the medicine is so to build up the general physical condition that, if possible, further degeneration of the sclera will be avoided. In addition to this, Rosella is to continue to put the atropine in the right eye only twice a day. The drops prevent the child's using the eye for too close work, since using the eye for close work is very much harder on it with this condition than using it for distant vision. After a given period of time, the medication in the right eye will be stopped and the left eye will then be given a period of rest by the medicine. For Rosella to use both eyes together tends to encourage the progression of her disease.

Since the two factors which will be most important in delaying the progression of this condition are, first, minimum use of the eyes, and, second, a maximum degree of general health, the doctor recommends that Rosella spend as much of her free time outdoors as possible. Of course, her outdoor play should not be too strenuous. For instance, she should not indulge in tug-of-war or very strenuous ball games where it is necessary for her to be jumping and dodging and bending over and also running the danger of being struck a severe blow. Of course, we realize perfectly that if we recommend that the child spend a great deal of time outdoors, it will be necessary for her to have some way of passing the time. Although there is a certain degree of hazard in any activity (since any sudden blow to the head, such as would occur in a fall or being hit by a ball, etc., might cause further damage within the eye), outdoor play with a group of little girls about her own age, engaging in not too strenuous games of tag, bouncing soft rubber balls, or walking, ought to be most acceptable.

We wish to see Rosella in the clinic in four weeks, which will be

February 25. Contrary to our usual arrangement, we are making plans to treat Rosella on Saturday morning in order that she may not miss any more time from school.

Although Miss Kenwood gave us a very brief verbal report of the situation, we are wondering if we may not have a written report from you giving Rosella's likes and dislikes and a general outline of her use of free time, her food habits and her ability to get along with other children.

Very truly yours,
Social Worker, Eye Service.

Relationship with Other Medical Social Workers

The eye clinic worker, as a member of a staff of other medical social workers, all of whom may keep in touch with the patients who start treatment in their respective clinics, may work out many of the problems of her eye patients through these other workers. For example, a patient may be admitted to the diabetes clinic; the worker there becomes concerned about how he is going to get his diet and insulin; later he may be found to have retinitis and be referred to the eye clinic. The eye clinic worker would then give the recommendations of the ophthalmologist to the first worker, who would see that they were integrated for the patient with the instructions from the diabetes clinic. Thus, an opportunity is created, case by case, for the rest of the social work staff to gain knowledge of eye conditions and their implications. The eye clinic worker may have to begin with explaining the meaning of 6/12 or 20/40, but she may consider herself the specialist in the interpretation of these findings and help to bring added consideration to eye conditions, or to conditions which may produce them, in the whole case load of the agency.

Integration of Findings

Through the understanding of the patient's situation, the social worker has an opportunity for doing some positive preventive work in direct health teaching of patients. Very little attention is being paid in most clinic ophthalmic practice to the general nutrition of patients. This does not refer to the conditions in which special dietary advice is necessary. Is it not possible that, with adequate knowledge of balanced diets and the protective food

constituents, the social worker may help to increase the patient's general resistance?

Visits to the home often reveal inadequate lighting; although the school lighting facilities may be good, children may be doing their outside assignments under most unsatisfactory conditions. Attention to these details may not only improve the situation for the patient, but are of benefit to the rest of the family as well.

We have often heard that the satisfied patient himself may be the best publicity person for good eye hygiene and medical care, but he must be cognizant of the significance of the important factors. A woman with glaucoma who had greater impairment of vision than she might have had if she had sought treatment earlier may, if she fully understands that fact, send her friends who notice failing vision to an ophthalmologist earlier than they might have gone otherwise. The extent to which patients are able to do this effectively goes back to the interpretation given them in the medical institution. In this interpretation, the medical social worker may share some responsibility with the physician.

Conclusion

For a social worker to fit into an integrated eye health program it is necessary for her to be conversant, among other things, with various eye conditions, their symptoms, course, and treatment, their social implications, the physiology of seeing, the principles of eye hygiene, standards of illumination, the methods of educating the visually handicapped, as well as to be a good social case worker. To gain this knowledge on the job means learning at the expense of the patients. It requires opportunities for learning that are not ordinarily available in the average eye clinic in the regular day by day work.

Medical social workers are in a strategic position for correlating the medical and social forces of the community interested in the prevention of blindness and are challenged by this opportunity.

Editorial

George Blagden*

1867–1934

WITH a sense of personal as well as community loss the National Society for the Prevention of Blindness records the death, on March 22, of its counselor and friend, George Blagden. Becoming interested in the work of the Society in 1913, when it was still a state committee, he helped with unceasing effort to develop it into a national organization built upon a firm foundation, with an influence reaching far beyond the confines of the United States.

His presence always radiated cheer and gave a feeling of security based on wise thinking. Largely because of him this Society, of which he was treasurer from 1913 to the time of his passing, was able to weather the storm of depression. His was no mechanical service; no detail was too small for his attention, no task too great for his undertaking.

The Executive Committee and the members of the staff of the National Society for the Prevention of Blindness extend to his family their deepest sympathy.

May the mantle of his wisdom fall upon those who carry forward the work to which he gave such a full measure of devotion!

* Resolution adopted at a special meeting of the Executive Committee of the National Society for the Prevention of Blindness, March 27, 1934.

The Forum

THIS section is reserved for brief or informal papers, discussions, questions and answers, and occasional pertinent quotations from other publications. We offer to publish letters or excerpts of general interest, assuming no responsibility for the opinions expressed therein. Individual questions are turned over to consultants in the particular field. Every communication must contain the writer's name and address, but these are omitted on request

Automatic Light Control in the Modern School*

The sense of sight is the most important avenue through which the normal pupil receives impressions in the educative process. The complex operation of seeing is dependent upon vision and illumination. Objects are seen clearly in proportion to the acuity of vision and the illumination of those objects and their surroundings.

While the human eye is perhaps the most complex and highly developed organ of seeing in the animal world, it is, at the same time, the most easily impaired by undue strain or disease. Long-continued eyestrain on the part of a pupil results in impaired vision, reduced rate of progress in work, lowered efficiency, repetition of grades and discouragement of effort.

Acuity of vision may be controlled and improved by appropriate lenses. Lighting may be controlled and improved with respect to all of its elements. Modern building science and engineering efficiency in artificial lighting have placed within reach the means of controlling the quantity, the distribution, the direction, the diffusion and the spectral character of light.

The Eye a Poor Judge of Light Values.—Adequate school lighting may be defined as that continuous status of illumination within which the human eye can function with the highest possible efficiency with the least possible fatigue under normal conditions. Under such conditions the worker is least aware of the factor of illumination since the balance of quantity, distribution, direction, diffusion and spectral character is neither unusual nor lacking.

* Extracted from *The Nation's Schools*, vol. XII, No. 5, November, 1933.

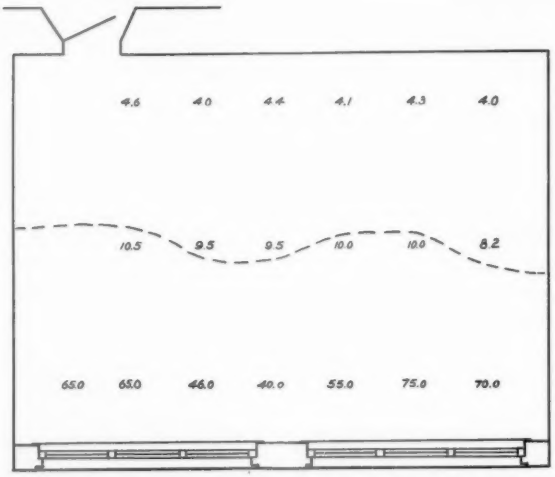

Fig. 1.—Foot-candles of illumination at the working surfaces of desks. Sky completely overcast and raining. Time, 9 a.m. North orientation. Values below 10 foot candles as indicated by the broken line are insufficiently lighted.

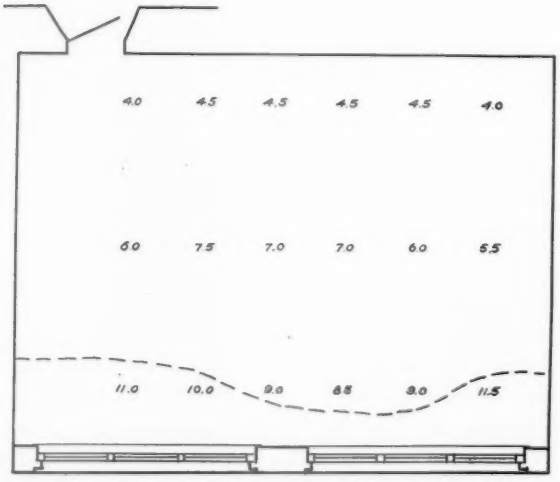

Fig. 2.—Foot-candles of illumination at the working surfaces of desks. Sky completely overcast and raining. Time, 8:30 a.m. South orientation. This represents conditions on the same morning as that of Fig. 1.

Continuity in the status of illumination is here emphasized, because, while the human eye rapidly adjusts itself to changes in illumination, the character of school work tends to limit this range of adaptability and make strain and fatigue with their harmful results more apparent. It is this same ability of the eye to adjust itself to variations in the illumination factor that makes the eye an unreliable judge of the efficiency of lighting. The average individual is far more able to judge normal temperature fluctuations than he is to judge adequate lighting conditions. If the temperature in the average school room drops more than four or five degrees below normal, it is noticed at once and there is a call for heat. The illumination of the room, however, may fall far below ten foot-candles without the fact becoming noticeable.

Figure 1 and Figure 2 illustrate unsatisfactory lighting conditions in two schoolrooms that were accepted by teachers as normal, evidenced by the fact that no artificial light was used. These teachers, although considerably above the average in general ability, were clearly unaware of the conditions that were producing a high degree of eyestrain among pupils in these rooms.

Automatic Light Control Essential.—For many years room heating has been controlled by automatic thermostatic devices. These instruments have been refined and their service extended so that their specification is no longer questioned in school buildings. Only recently, however, has it been recognized that similar automatic control of lighting is necessary, desirable and possible.

The recent perfection of the photo-electric relay and the illumination meter have made possible for light control what the thermostat and thermometer have done for heat control.

The photo-electric relay turns on and off the lights in a room or group of rooms automatically, using as its operating means the light intensity within the room or the light intensity entering the room from the outside. The intensity at which the relay is set to turn the lights on or off is determined by the use of the illumination meter, which is a highly sensitive type of photometer, using two photo cells for differentiation in readings.

While the photo-electric relay has a capacity large enough to operate the lights in an ordinary classroom, the cost of a photo cell for each room is an unnecessary if not a prohibitive expense. By the use of larger relay switches, which can be actuated by the photo-electric relay, any number of rooms requiring the same range of illumination can be connected to the same relay switch or circuit breaker.

The installation of this equipment in the Garfield Elementary School, Wyandotte, Michigan, was described briefly in the October number of *The Nation's Schools*. The building being used for experimental light control is approximately 279 feet long by 104 feet deep, of the I type. The building is two stories high and has a south orientation. It has a cubage of 834,400 feet. It is designed for a twenty-section semidepartmentalized type of organization. Construction units are 15 feet wide by 22 feet deep. Two such units comprise an ordinary home room, and three units are combined for an art room or library. The window stools are 2 feet 9½ inches from the floor, and the plaster opening is within 3 inches of the ceiling. The windows are arranged in two banks with narrow mullions, the pier in the center of a two-unit room being 3 feet wide. The ratio of window area to floor area is approximately 1 to 3.2.

Artificial lighting consists of six units of 200 watts each in home rooms 30 by 22 feet. Each lighting unit is of the reflex type of glassware, 14 inches in diameter by 9 inches deep. These units are manually controlled by a single toggle switch on the operating board just inside the room entrance door. Three-unit rooms have two toggle switches controlling the lights in two gangs, one on the window side of the room and one on the side opposite the windows.

The lighting in all classrooms, home rooms, and corridors is controlled by three photo-electric relays, A, B and C. Relay A controls all the rooms on the south orientation, Relay B controls all the rooms on the north orientation and Relay C controls the corridor lighting.

The photo-electric relays are recessed into the wall opposite the window openings in selected rooms, with the relay window opening 7½ feet above the floor. The corridor relay is midway in the corridor at the same height.

Conduit lines lead from the photo-electric relays to three remote controlled switches, or circuit breakers, having capacities of 60, 100 and 200 amperes, respectively. The room and corridor loads are distributed between these three circuit breakers. Each room has its manual control switch for lights the same as in the ordinary layout. There are three small momentary contact switches in the principal's office, one for each of the circuits controlled by the three photo-electric relays. Each contact switch has three points, which makes it possible to produce three different conditions on each circuit, according to the particular requirements of the moment:

1. The entire group of circuits may be placed on manual control so that each room will operate as a separate unit.

2. The entire group of circuits may be placed on photo-electric control so that the lights will operate automatically.

3. The entire group of circuits may be turned off so that the circuits will be dead.

In actual operation, the contact switches are turned on "automatic control" when school opens in the morning. Every room then receives light as needed and when natural illumination becomes sufficient the lights turn off automatically. They turn on again, however, when the illumination falls below the critical point set. If a room is not in use, the lights may be turned off at the regular room switch manually, thus avoiding waste of current. However, if the photo-electric relay is not calling for light, the light cannot be turned on at the room switch.

The contact switches in the principal's office are turned on "manual control" at the close of the day's session. This means that only such rooms as are in use after the session will be using light. All circuits except the emergency lighting are turned off when the building is closed for the night.

Some questions may be raised as to the necessity of separate photo-electric relays for north and south exposures. Contrary to general opinion, with equal window area and floor window ratios, there is less demand in northern latitudes for artificial lighting on a north exposure than on a south exposure, due to better diffusion of light.

In a test conducted on a typical overcast day, lights on the north exposure were in use for one hour and thirty-five minutes, while lights on the south exposure were in use for six hours and five minutes. The lights on the north exposure burned during the following periods: 8:15 a.m. to 9:06 a.m., 2:10 p.m. to 2:20 p.m., and 3:16 p.m. to 3:50 p.m. The lights on the south exposure burned during the following periods: 8:15 a.m. to 11:30 a.m., and 1:00 p.m. to 3:50 p.m.

Local conditions, such as trees, the nearness of other buildings, smoke, use of shades and condition of the window glass, affect the relative demand for light and may make certain orientations use more light than they normally would.

The setting and checking of the photo-electric relay are of prime importance. If ten foot-candles are set as the minimum of illumination for a working surface, this should be applied to the darkest working surface of the room. This will ensure a minimum of ten foot-candles of illumination for every pupil. The photo-electric relay may then be set to turn the lights off when the value reaches eleven foot-candles or any other desired point.

Economy in lighting is desirable, but economy should mean control over needless waste of current. Manual control, even under constant supervision, often results in

waste of current. It is not uncommon to find lights burning in direct sunshine. Too great pressure from administrators in the interest of economy usually results in inefficient use of artificial light and consequent damage to pupils' eyesight.

The question is often asked, will automatic control of lights save money? That depends upon conditions. If there has been an honest effort to provide pupils with an adequate amount of light, or if there has been a large waste of current when not needed, there will be a marked saving with automatic control. If, however, pupils have been deprived habitually of the necessary amount of illumination, there will be no saving in electric current cost if the control relay is set to give an adequate amount of light. The cost of installation in such a building as described above is approximately $500. The ultimate saving to pupils' eyesight is incalculable.

FRED W. FROSTIC
Superintendent of Schools,
Wyandotte, Michigan

Headaches in Children

When a baby is born its senses of taste and hearing and its sensitivity to pain, heat and cold are probably developed just as acutely as they ever will be. This is not true of its vision. For the first few months of life the baby has to learn the use of its eyes and learn slowly to interpret what it sees. This doesn't mean that it does not receive pictures of what it looks at clearly, from the very beginning, but its eyes are not co-ordinated and are apt to roll in various directions; its perception of depth and space is quite undeveloped. This development takes place when the child begins to reach for objects it sees and begins to realize that the picture it sees of a milk bottle has a direct reference to what its tongue knows milk to taste like. In short, then, our perhaps most valuable special sense is the slowest of all the special senses to develop to its perfection.

Any handicap which the child sustains in its early development, such as nutritional disturbances and diseases such as mumps, measles, and other infantile sicknesses, may, and often does, disturb this slowly acquired visual function. It is a well-known fact that in early childhood cross-eyes are apt to develop after some sickness which lowers the child's resistance, or after some trivial fall or bump which is a general shock to the child's nervous system. In this regard children vary greatly. One finds that the rather phlegmatic, solidly built type of child is not as likely to have ocular muscle difficulties, with headaches or cross-eyes, as are the more nervous children.

The years up to school life, then, are years in which the development of children's vision and finer de-

grees of space perception takes place, and in which the two eyes are co-ordinated so that these two cameras give one satisfactory mental image. During the first years of school life comes the time when the first symptoms of ocular strain are encountered, although this may in less sensitive children be delayed until their high school years, when work is crowded a bit. No eye is, optically speaking, perfect; but, unless the defect is quite marked, normally balanced, healthy children go through their school years without needing attention for minor optical defects. Markedly farsighted or nearsighted children have their optical defects discovered in their early school years. The former defect causes headaches and blurring of print; the latter prevents clear vision from back seats of the schoolroom. These children need glasses earlier in life. As school work increases, the minor defects may be evidenced in high-strung children by repeated complaints of headaches, tiredness, restlessness, inability to concentrate on any task for any length of time, feelings of faintness, red-rimmed eyes, and easy tearing. In this group the correction of minor errors is of great importance.

Children in this group are easily upset by a bit too much light, or by a bit too little light, by glare from the walls or ceiling, disturbing noises, and so forth. In general, the headaches of the school child occur after school hours and are often fleeting and often easily dispelled by a bit of exercise, a piece of bread and jam, or a glass of milk, or by a dose of castor oil. If due to the eyes, however, they persist in appearing after school hours and we find, as a rule, frontal headaches with a minor amount of refractive error—usually farsighted astigmatism. In the adolescent age, we find girls more frequently than boys have these symptoms. The boys are living a somewhat healthier type of outdoor life, not studying quite so hard, nor going through the developmental changes which in themselves upset the equilibrium of so many girls.

All headaches, of course, are not due to the eyes. One must be careful not to prescribe glasses indiscriminately, but to examine the tonsils and teeth and, especially, the sinuses, if there is any indication of frequent colds or chronic dripping of mucus down the throat in the mornings. Fresh air, exercise, a cold sponge with a brisk rubdown in the morning, early bed, few movies, may be as beneficial as eyeglasses applied for a minor error. It is known that optical companies and non-medical men are permitted to prescribe glasses in most states of the Union. Their advertisements in the street cars and newspapers tend to make the lay reader believe that almost all headaches can be cured by glasses, and, as their profit in business

comes mainly from the sale of glasses, there are large numbers of not only children, but people in general, wearing glasses who do not really need them. A child should be sent for examination of its most precious special sense to a well-qualified medical man who has, in addition, spent the necessary years in preparation for the special diagnosis of the diseases of the eye. If he is in other respects a proper doctor, he will not feel that all headaches should be divided, as Caesar divided all Gaul, into three parts: first, headaches due to the right eye; second, headaches due to the left eye; third, headaches due to both eyes. There are many other reasons.

The routine examination on a child's eye is not, to me, an absolute necessity. Ninety-nine times out of a hundred a child who has enough defective vision or enough objective discomfort from his vision to amount to anything will complain of it in sufficient time so that it can be properly attended to. (I know this is heresy, but it is the way I feel about it.) I find many children sent to me because school nurses have rendered a report to the parents that the child's eyesight is defective. Most of these examinations are not conducted under standard conditions and some children are easily confused and much of the work is done in a hurry.

A great many school children show some slight deficiency in vision which is theoretically interesting but which, practically, does not need any treatment or glasses. Certain instruction regarding care of the eyes could be given to children in all public schools in the course of a few minutes for each class.

1. Never carry a pointed object upward, but always with its point down.
2. Report to an eye specialist the first day that eyes are inflamed sufficiently to cause a secretion of any yellow or white material.
3. Before an eclipse of the sun, warn all school children that they must not observe the eclipse through anything but the most darkened of glasses.
4. Do not share the towels or bedding with a child who has "sore eyes."

HANS BARKAN, M.D.
San Francisco, California

Note and Comment

National Society Moves Headquarters.—About the first of April, the National Society for the Prevention of Blindness, along with other members of the National Health Council, will move its headquarters to 50 West 50th Street, into the R. C. A. Building of Radio City. The move, which will bring the Society's headquarters to a more central location, was inspired by the hope that, eventually, enough health and welfare organizations would make Radio City their headquarters to make possible a special building to house co-operatively a large proportion of such organizations having New York headquarters.

Is Eye Protection in Industry a Reality?—It has often been said that while the possibilities of eye protection are becoming generally known, they are taken seriously by only a few outstanding organizations. Industrial accident is rapidly taking its place as the leading cause of eye loss in this country, says Dr. James J. Monahan, in the December issue of the *Pennsylvania Medical Journal.* Following a discussion of a series of 300 consecutive eye injury cases, he concludes, "Early treatment and the use of goggles in specified occupations will appreciably decrease industrial blindness . . . The further aid in preventing the loss of eyes lies in the enacting of a law compelling employees to wear goggles in certain specified work. The appointment of a consultant ophthalmologist by each compensation board in controversial eye cases would render greater justice to employer and employee, prevent legal expenditures and delays, and relieve the physician of much embarrassment and criticism."

Statistics from various sources bear out this conclusion: that while knowledge of prevention of industrial eye accidents is widespread, practice is not. In the biennial report of the industrial Accident Board of the State of Idaho, the frequency of the occurrence of eye accidents is brought out; of a total of 12,717 accident claims, nearly ten per cent, or 1,238 accidents, involved the eyes. One accident resulted in permanent total disability; 49 resulted in

permanent partial disability; and 1,188 accidents were temporary in effect. The number of eye accidents was second on the list of all accidents, headed by accidents to fingers. Figuring the average cost of accident to the employer as $131.37, we have a bill of over $160,000 in medical expenses and compensation alone. But it is not only the cost of compensation that makes accidents expensive; the hidden costs, figured at four times the amount of compensation, must be added, bringing the bill for eye accidents in two years, in a state which is not highly industrialized, to $800,000.

From *Safety Standards for the Protection of the Head, Eyes, and Respiratory Organs*, a recent publication of the Secretary of the Navy Yard Division of the United States Navy, we learn that of a total of 14,912 injuries to employees of the United States Naval establishments in one calendar year (1926), 3,583—or 24 per cent —were injuries to the eyes. "Experience shows that a large majority of these eye injuries could have been prevented by the use of proper protectors," says the introduction to these standards.

Causes and Prevention of Blindness, Academy's Memorial Lecture.—The Hermann M. Biggs Memorial lecture, given under the auspices of the Committee on Public Health Relations of the New York Academy of Medicine, will be devoted this year to "The Causes and Prevention of Blindness." Dr. Arthur J. Bedell will deliver the lecture, to be given May 3, 1934, at the New York Academy of Medicine, Fifth Avenue and 103rd Street, New York City. Public health and social service workers and others interested in the prevention of blindness are invited to attend.

Color Dependence on Eye Shown by Scientist.—The old poser of the elementary physics class, "If a tree falls in the forest, and there is no one there to hear it fall, does it make a noise?" may be replaced by another, "If the eye sees blue, is it blue?" Prof. J. S. Haldane, physiologist, chemist and philosopher, delivering the inaugural address of the one hundred and ninety-seventh annual session of the Edinburgh Royal Medical Society, formulates his theory of color and light, antiquating the accepted theories of Galileo and Newton: (1) In the perception of either color or brightness, our vision as a whole is always active; there is no merely objec-

tive cause of color or brightness. (2) In this active perception we can distinguish the co-ordinated maintenance of color and complementary color, as well as brightness and darkness, in the field of vision. Illustrating his remarks, Prof. Haldane showed that he could make light, which by the laws of physics ought to be yellow, turn white, blue, green, or any other color, merely by changing the whole of the background.

Prenatal Blood Examinations in England.—To facilitate physicians' obtaining Wassermann tests of every expectant mother, Dr. H. C. Maurice-Williams, medical officer of health in Southampton, England, announces the opening of a testing bureau at the service of all physicians in the borough. He says, in the *Medical Officer* for November 18, "In view of the gross harm conveyed by parental syphilis, every patient reporting for prenatal supervision, will, in future, have a blood Wassermann carried out, whether there are symptoms leading to suspicion or not . . . If syphilis is found in any pregnant woman and treatment can be instituted at a reasonably early date, the prospect of the child being born in a healthy condition is much increased, with the result that in later years there will be less child blindness or interstitial keratitis . . ."

Workmen's Compensation Law and Industrial Board Rules of New York State.—In reviewing the material comprising the volume *Workmen's Compensation Law—State of New York—1933*, we note with interest the continuance of the use of the Snellen symbols, 20/20, 20/40, 20/60, etc., as common fractions denoting central vision remaining after accident. The American Medical Association has worked out the actual loss of vision in terms of percentages, as follows:

Snellen Notation for Distance	Percentage Loss of Vision
20/20	0.0
20/40	16.4
20/60	30.1

New York is one of the very few states that have not altered the erroneous use of the Snellen rating as common fractions.

New Movie Camera Records Eye Operations.—A motion picture camera, with special features to facilitate the recording of eye operations, is described in the December *Archives of Ophthalmology*, by H. F. Pierce. By mounting the camera upon a swinging arm, the angle of taking may be easily changed without disturbing the focus of the picture; no special lighting is required, and no valuable floor space is taken up. The remoteness of the camera from the field and the ease of manipulation permit the photographer to record the operation with a minimum of interference with the operator; the writer upholds the camera's superiority because it shows the operation as it really happened, not as a "staged" operation.

Goggles—Yesterday and Today.—"Saving Eyes in the Steel Industry," a paper read twenty years ago, at the first co-operative safety conference in Milwaukee, by W. H. Cameron, was the formal opening shot in the effort to save the eyes of workers, and the first concrete step in the reduction of blindness from industrial hazards. Men in plants, here and there, had been wearing goggles and eye screens, but the American Steel Foundries was the first organization to protect eyes on a wide scale. The history of the use of goggles and eye protective devices, by G. M. Briggs, appearing in the January issue of *National Safety News*, is the first of a series of articles on eye protection and goggles.

Electric Eye Enters Home and Office.—Although the photo-electric cell, popularly known as the electric eye, has been publicized in its rôle of guardian to the crown jewels of England and as the protector of men working near great crushing machines, its use in the home, school, office and factory as a light meter has recently been made known. The Sight Meter, light in weight and compact, uses the electric eye to measure light up to fifty foot-candles. It is easily read, and serves as a guide to lighting, for its dial carries recommended illumination standards for various activities. It has proved of special value in schools and factories; in some communities electric companies offer home lighting surveys using the Sight Meter as a guide, as part of their service to consumers; a leading hotel chain now guarantees "engineered light" in

all its guest rooms. This simple light measuring device promises to make the general public more light conscious.

Type Designing a Special Art.—To the many of us who recognize in typography only Roman and italic letters, it may come as a surprise to hear that one type designer, Frederic Goudy, the dean of American typographers, has created ninety type faces. Goudy, Kennerly, Garamond and Forum are some of his more popular forms. In an interview with *Editor and Publisher* (January 13), Mr. Goudy, describing the processes of evolving a new type face, named the five requisites of type: simplicity, dignity, legibility, beauty and style.

Thorough Vision Testing in Beverly Schools.—The Massachusetts law, requiring teachers to examine the eyes of school children, is worse than none, says Dr. Whitman C. Stickney, school physician of Beverly, in an article in the *School Physicians' Bulletin* for December. In the Beverly schools, where the need of checking each child's sight is fully realized, each child entering the first grade is given a retinoscopic examination by an ophthalmologist. In the second grade, every child wearing glasses has them checked, and those who, at their first grade examination, showed slight deviations from the normal, are rechecked. This service is paid for by the school health department.

National Conference on Handicapped Children.—Under the joint sponsorship of the National Council on the Physically Handicapped, the National Committee for Mental Hygiene and the School of Education, New York University, a national conference on the education and rehabilitation of handicapped children was held at Washington Square College on March 9 and 10. "The Education and Rehabilitation of Partially Seeing Children," a section under the auspices of the National Society for the Prevention of Blindness, was of special interest to sight-saving class teachers and educators.

Through the Eyes of Samuel Pepys.—Unimportant in his own right, frivolous by nature, Samuel Pepys has left a deeper and more striking picture of life in his day than did many of the more

serious philosophers and statesmen of his time. Beginning his famous diary in his twenty-sixth year, he recorded the events and impressions of his daily life until failing eyesight forced him to stop, ten years later. Lois Stice, who excerpts medical notes from his diary, in the December issue of *Hygiea* tells us about the eye troubles that caused Pepys to bring to a close his diary.

"From other records it is known that Pepys did not become blind and that he lived a long and busy life, dying in 1703. He was only thirty-six when he wrote this pathetic valedictory: 'And thus ends all that I doubt I shall ever be able to do with my own eyes in the keeping of my journal, I being not able to do it any longer, having done so now so long as to undo my eyes almost every time that I take a pen in my hand; and therefore resolve from this time forward to have it kept by my people in longhand and must be contented to set down no more than is fit for them and all the world to know; or if there be anything I must endeavor to keep a margin in my book open, to add here and there a note in shorthand with my own hand.

" 'And so I betake myself to that course, which is almost as much as to see myself go into my grave; for which and all the discomforts of being blind, the good God prepare me.' "

Life-Saving Illumination.—Nation-wide statistics show that while only twenty per cent of traffic is on our highways during the hours of darkness, nearly fifty per cent of the accidents happen during those hours, and more than half of the fatalities occur then. The reason lies in the inadequacy and faultiness of illumination of streets and highways; and glaring headlights make the task of seeing difficult. In a note in the December issue of *Safety Engineering*, B. B. Fortney urges the use of smaller, more concentrated headlights, which will be less blinding to the oncoming car and increase roadway illumination at a distance further ahead of the car.

Meeting of the International Association for Prevention of Blindness.—The general assembly and annual meeting of the International Association for Prevention of Blindness will be held jointly with the International Organization Against Trachoma, in

Paris, May 14, 1934. The meeting will coincide with the date of the Congress of the French Ophthalmological Society. "Prevention of Blindness in the Colonies and Tropical Countries" will be the theme of the general discussion, and the Committee on the Classification of Causes of Blindness will meet to discuss a basis for an international classification.

Industrial and School Lighting Committee Plans Year's Work.—Four main lines of research will occupy the Illuminating Engineering Society's Committee on Industrial and School Lighting through the coming year, according to a report of the Committee's recent meeting. A study of the lighting of sight-saving classrooms is now being made, with the co-operation of the National Society for the Prevention of Blindness. Other projects are an investigation in the progress of new designs, lighting trends and possible developments in the industrial lighting field; an investigation of lighting and safety as they pertain to factories and schools; and recommendations for the lighting of rooms outside school buildings that are used for studying, such as libraries, dormitories, fraternity houses, etc. The wide field of study promises interesting papers for the International Commission on Illumination, which will meet in Germany in 1935.

Eye Course at New York University.—In co-operation with the New York State Department of Social Welfare, Commission for the Blind, Prevention of Blindness Department, New York University offers a survey of eye conditions, conducted by ophthalmologists and specialists in eye physiology and anatomy. The aim is to present a comprehensive survey of eye conditions which will be of value to workers in various fields of general welfare. Social workers, school nurses, sight conservation teachers and public health nurses find the course of especial benefit.

Greater New York Safety Conference.—The Fifth Annual Greater New York Safety Conference was held at the Pennsylvania Hotel, March 6 and 7. Under the leadership of the Metropolitan Chapter of the American Society of Safety Engineers and the Engineering Section of the National Safety Council, fifty-six

organizations in Greater New York co-operated in fifteen sessions on the various phases of safety and accident prevention. While there was no session devoted exclusively to the eye, at the meeting on Safety Equipment, "Quality Requirements in Eye Protection" and "The Sight Meter" were topics of interest.

Defective Vision a Factor in Accidents.—Defective vision was the primary cause of 4 per cent of accident-proneness, and it was probably a factor in other primary causes responsible for 40 per cent of accident-proneness, according to a graphic analysis of the primary causes of accident-proneness by the Metropolitan Life Insurance Company based on an intensive study of the accident experience and personal history of 50 street car motormen in Cleveland, Ohio. Increasing attention has been given in recent years to the fact that some employees apparently are more susceptible to accidents than others, the Metropolitan's report says. In an effort to determine what steps should be taken to analyze accident susceptibility and to correct the conditions producing this susceptibility, the Metropolitan undertook this study in co-operation with the Cleveland Railway Company. The chart analyzing the results shows—in addition to 4 per cent of susceptibility due to defective vision—the following other primary causes of accident-proneness and their percentage of responsibility:

1. Failure to Recognize Potential Hazards	12 per cent
2. Faulty Judgment of Speed or Distance	12 per cent
3. Failing to Keep Attention Constant	8 per cent
4. Nervousness and Fear	6 per cent
5. Fatigability	2 per cent
Total	40 per cent

While it is impossible to arrive at any conclusion as to the precise extent to which visual defects contributed to these five causes of accident-proneness, the close association of these causes with commonly recognized symptoms of defective vision is readily apparent. Further and more extensive studies along this line in industry generally might reveal a relationship between accident-proneness and defective vision of such magnitude as to revolutionize completely present techniques of accident prevention.

National Society Notes.—The National Society is pleased to announce the addition to its Advisory Committee of Dr. Charles A. Bahn of New Orleans. Dr. Bahn is president of the Louisiana Society for the Prevention of Blindness, and is actively interested in rehabilitation.

Widespread interest in the promotion of local prevention of blindness projects is evidenced by requests for co-operation of National Society staff members. In Alabama, Mr. Lewis H. Carris, managing director, was invited to confer with ophthalmologists and health officials on steps to be taken in organizing a permanent prevention committee and program. He visited Talladega, Montgomery, Tuscaloosa and Birmingham in making a survey of available set-ups for such an organization. Miss Eleanor P. Brown, associate director, advised with the Louisiana Society for the Prevention of Blindness as to the promotion of their work. During her six weeks' stay in New Orleans, Miss Brown conferred with the faculty of Charity Hospital and with the medical social worker in the eye clinic; interviews with members of the Flint-Goodridge Hospital indicated an interest in medical social eye service in that institution. A trip to St. Louis brought Miss Brown into contact with the medical social eye work being carried on at Washington University Clinics and Allied Hospitals.

Carrying on efforts to conserve the sight of school children, Mrs. Winifred Hathaway, associate director, has visited scattered centers to talk with school authorities, civic groups, and parents and teachers on various phases of sight conservation. In Knoxville, Tennessee, she met groups of school principals, teachers, the Rotary, Kiwanis and Civilian Clubs, and the Central Council of the Parents and Teachers Association, as well as many groups of school children, to talk on the importance of good light and proper care of the eyes. In Brasstown, North Carolina, she assisted in a survey of school lighting at the John C. Campbell Folk School. Mrs. Hathaway attended lighting conferences of school authorities throughout Westchester County, New York. At the meeting of the Ophthalmological Club of Washington, D. C., Mrs. Hathaway was asked to speak of the possibilities and techniques of orthoptic training.

Through conferences with CWA authorities, Mr. Louis Resnick,

director of industrial relations, has included in CWA working regulations minimum standards for eye protection of workers. Safety posters, eye charts and the self-appraisal form for eye conservation in industry have been supplied the local authorities, and copies of the minimum standards for safety are sent to heads of CWA activities in all states of the Union. Miss Mary Emma Smith, R.N., director of nursing activities, has assisted in demonstrating methods of vision testing for the CWA in New Jersey.

Miss Smith has undertaken an eye health survey, in connection with the general school health study being made in New Mexico, under the co-operative auspices of the New Mexico Bureau of Public Health and the American Social Hygiene Association.

In connection with the contribution being made by the Society to the Committee on Statistics of the Blind, Miss C. Edith Kerby, statistician, visited the Pennsylvania Institution for the Instruction of the Blind (Overbrook), and the New York State School for the Blind (Batavia), to study records of causes of blindness in those schools. Miss Kerby also attended the conference of the American Statistical Association in Philadelphia.

Dr. Anette Phelan, staff associate, has been active in the George Peabody College for Teachers, at Nashville, Tennessee, in integrating eye health in the teachers' training course. Both Dr. Phelan and Mrs. Hathaway represented the Society at the meeting of the National Association in Cleveland, Ohio.

At the invitation of the committee on conservation of vision of the Medical Society of the State of Pennsylvania, Mr. David Resnick, director of publicity, conferred with Dr. Samuel Horton Brown, chairman of the committee, on plans for future publicity on the committee's program.

Co-operating at the Greater New York Safety Conference in New York City were Mr. Carris, who served as chairman of the dinner committee, and Mr. Louis Resnick, who organized the National Society's exhibit. Mr. Carris represented the Society at the luncheon meeting, during the regional conference of the Social Hygiene Council of New York; the subject of his talk was "Venereal Disease and Family Welfare: Physical Aspects."

At the annual meeting of the International Association for Prevention of Blindness, Mr. Carris will represent the Society;

Dr. Park Lewis, vice-president of the International Association, as well as of the Society, will also attend.

The Office of Education, United States Department of the Interior, is calling a National Conference on Fundamental Problems in the Education of Negroes, to be held about May 1. Miss Smith has been asked to serve as an adviser to the Committee on Health Education of the Conference.

Current Articles of Interest

Cycloplegia for Diagnosis, Edward Jackson, M.D., *Archives of Ophthalmology*, January, 1934, published monthly by the American Medical Association, Chicago, Ill. Diagnostic cycloplegia is practicable through the peculiar permeability of the cornea to fluids and crystalloids. It adds great certainty to diagnosis of refractive errors of the eye and should be understood and employed by everyone who is engaged in ophthalmic practice.

Treatment of Convergent Strabismus, H. Maxwell Langdon, M.D., *Pennsylvania Medical Journal*, January, 1934, published monthly by the Medical Society of the State of Pennsylvania, Harrisburg, Pa. Discussing the methods of treating the various forms of crossed eyes, the author concludes that it is a sane suggestion that every child should have his eyes examined about the time he is four, even if squint is not present. A case of strabismus should be under competent observation as soon as the condition is discovered.

The External Examination of the Eye in the Diagnosis of General Diseases; I. Vision, Position of the Eye in the Orbit and the Examination of the Eyelids, Conrad Berens, M.D., and Joshua Zuckerman, M.D., *New York State Journal of Medicine*, September 15, 1933, published monthly by the Medical Society of the State of New York, New York, N. Y. Although physicians appreciate the importance of certain eye symptoms in the diagnosis of systemic disease, the purpose of this series of papers is to point out those phases of the external examination of the eye which have proved valuable in the diagnosis of general diseases.

The Kahn Reaction in the Aqueous Humor, F. Bruce Fralick, M.D., *Archives of Ophthalmology*, December, 1933, published monthly by the American Medical Association, Chicago, Ill. Results in a series of tests upon the blood, spinal fluid and aqueous humor of 47 patients seem to confirm the hypothesis that a positive Kahn reaction in the aqueous humor may be expected

when the tissues from which that fluid is derived are syphilitic, and that a negative reaction may be expected with a nonsyphilitic involvement of those tissues.

The Evolution of Ideas Concerning Retinal Detachment Within the Last Five Years, J. Gonin, *British Journal of Ophthalmology*, December, 1933, published monthly by the British Journal of Ophthalmology, Ltd., London, England. Address, made at the presentation of the William Mackenzie Memorial Medal to the author, traces the recent history of techniques in locating and operating upon retinal tears.

Nutritional Night Blindness, Dwight L. Wilbur, M.D., and George B. Eusterman, M.D., *Journal of the American Medical Association*, February 3, 1934, published weekly by the American Medical Association, Chicago, Ill. A report of a case of nutritional night blindness shows that while absence of vitamin A is the primary cause of the condition, in this instance the diet was adequate in all respects; the bodily utilization of nutritional elements was interfered with by a gastrointestinal disturbance.

When Home and School Co-operate, Anette M. Phelan, *Child Study*, published monthly by the Child Study Association of America, Inc., New York, N. Y. The child's chances for normal development are enhanced when parents and teachers work toward that goal together; the author points out opportunities in which home and school may co-operate for protection of vision, and for the maintenance of other general health standards.

Contact Glasses, Charles A. Young, M.D., *Virginia Medical Monthly*, December, 1933, published monthly by the Medical Society of Virginia, Richmond, Va. History and description of contact glasses; method of fitting is outlined, and the special advantages and uses of contact glasses are suggested. The writer concludes: "The slight difficulty of insertion, the discomfort, especially in the beginning, and the fact that the glass can be worn from four to eight hours only at a time . . . are disadvantages which are of slight importance compared to the improved vision and comfort of the patient."

Mydriatic Glaucoma, Samuel V. Abraham, M.D., *Archives of Ophthalmology*, December, 1933, published monthly by the American Medical Association, Chicago, Ill. Acute glaucoma may be precipitated in middle-aged persons, prone to glaucoma, after the use of a mydriatic for relaxation of accommodation in refraction. The comparative rarity of this occurrence shows how little need be feared from the use of mydriatics. Among those most susceptible, the incidence is approximately 0.0217 per cent. If proper precautions are taken in all cases with suggestive signs of glaucoma, or in all cases where there is a family history of glaucoma, there is no appreciable need to fear the use of mydriatics even in persons over forty years of age.

The Responsibility of Health Departments in the Control of Syphilis, Everett C. Fox, M.D., *Texas State Journal of Medicine*, January, 1934, published monthly by the State Medical Association of Texas, Fort Worth, Texas. Although the organism causing syphilis, its serologic test, and its cure have been known to the medical profession for over twenty years, syphilis is still a leading cause of death and invalidism. The author estimates that only twenty-five per cent of the patients who receive antisyphilitic treatment receive anything like thorough treatment. The physician must go far beyond treating the disease in its early communicable stage; he must increasingly interest himself in early diagnosis, since, at this period of the disease, the chances for permanent cure are twenty-five per cent higher than after the secondary lesions have occurred; he must interest himself in prevention of the spread of the disease. If this procedure were followed, there would be a rapid decrease in the prevalence of syphilis, as has occurred in other communicable diseases, such as yellow fever, smallpox, tuberculosis and typhoid, after the institution of proper public health measures.

Book Reviews

TEXTBOOK OF OPHTHALMOLOGY. W. Stewart Duke-Elder, M.A., D.Sc. (St. And.), Ph.D. (Lond.), M.D., Ch.B., F.R.C.S. Volume I, The Development, Form and Function of the Visual Apparatus. St. Louis: The C. V. Mosby Company, 1933. 1,124 p. 1,022 ill., including 7 colored plates.

The journal of what is really a lay organization is no place for a technical review of such a book as this. It may be interesting, however, to consider it as a marker in the gradual evolution of ophthalmology as shown by its books and its journals.

The first textbooks were small affairs, for little was known about the eye beyond its external diseases. The effects of the common local infections of that day such as smallpox and gonorrhea, or the effects of diseases of the conjunctiva and cornea and iris, which could be seen, bulked very large; for the early clinicians were close observers. Much space was devoted to humors and temperaments, while vague words, like amaurosis, were used to classify conditions which caused pain or reduced vision, about which everyone theorized much and knew practically nothing.

Then came the ophthalmoscope with its revelation of the interior of the living eye, making possible the diagnosis and understanding of numberless recondite conditions, and connecting up during life the organic diseases of the eye with those of the body in general. The textbooks of that period were replete with descriptions and beautiful drawings of the newly discovered diseases of the fundus which later on became commonplace of ophthalmology.

Up to this time almost any physician could take up the study of the eye, and after a summer abroad qualify himself for practice as a specialist, for the additional knowledge was all contained in one or two small textbooks. Almost all the leading ophthalmologists had been or were at the same time general surgeons or physicians who practised ophthalmology as a side line. The invention of the ophthalmoscope changed all that, for it was much more difficult to master than our modern electric instrument, while its revelations meant nothing except to the well-trained clinician.

About the same time the fitting of glasses was taken away from the optical section of the local jewelry store, and put on a scientific basis, making necessary some study of optics with its mathematical formulae. The study of the visual fields; of muscle balance; of color vision and all the other constantly increasing details of the functional examination became more and more outside the ken of the ordinary physician or surgeon. And the time soon came when he made no pretense of knowing anything about the eye, while the ophthalmologists in the instinctive craving for association with those who "speak our language" were thrown more and more together, and developed the first medical specialty.

The books of this period began to contain whole sections about myopia, astigmatism, and the "phorias," which still constitute so large a part of the ophthalmologist's routine, and bulk so large in his library. The staining of tissues which made possible the study of disease under the microscope, and the identification of the various micro-organisms as the causes of disease shed its light on ophthalmology as it did on other parts of medicine. The more recent evolution of the slitlamp has made possible the study of the living eye with the microscope, and so put the ophthalmologist many steps in advance of his fellows.

The advent of local anesthesia and aseptic surgery, which has come within the memory of men still living, broadened tremendously the field of ophthalmic surgery and began to require special books for their elucidation and illustration.

Within the past few years the study of physiology and physiological chemistry has thrown new light on processes of life and death and enabled us to follow the physiological over into the pathological. The slow effect of foods, and toxins, and endocrines, and vitamins, the ultra-violet, and the infra-red, have been as important to ophthalmology as to the other branches of medicine. The investigations have opened up an ever widening field for research, but one which required special gifts of imagination and training. In this field the clinician is likely to make few contributions, and must be more and more a mopper-up of the art rather than a skirmisher of the science. But he must know about these advances as they occur, and must be the final judge of their practical value. From the constantly increasing mass of informa-

tion, efforts must be made at varying intervals to sift over and evaluate; to bring out textbooks which shall abandon the obsolete; condense the obsolescent; and collect from many sources the essential and the new.

Few of us have either the time or the training to follow in detail, to criticize, or to evaluate, work of this sort. Much of it is published in collateral journals we never see, and in foreign languages.

The present work is intended to do just this thing: to collect information from all possible sources, and to subject it to the criticism and the explanation of a man who has made an international reputation for his original work in experimental physiology, but who is still able to qualify as one of England's leading clinicians, and who has at the same time the gift for clarifying the complex, and investing the technical with interest.

The present volume of some 1,200 pages, with thousands of references to the original sources, is devoted to the normal eye, its embryology, its anatomy, its nutrition, its function, from the perception of light on the retina, to the interpretation of images by the brain. Only a man whose knowledge is not only vast but perfectly systematized, whose writing needs little revision and no polishing, can do this sort of thing in less than a lifetime, and if the succeeding volumes are up to the same standard, this system will be indispensable to the English-speaking ophthalmologist; it promises to be a veritable storehouse of evaluated hypotheses and of established facts.

ELLICE M. ALGER, M.D.

MIRRORS, PRISMS AND LENSES. A Textbook of Geometrical Optics. James P. C. Southall. Third Edition. New York: The Macmillan Company, 1933. 806 p.

As one reviews the third edition of this textbook he becomes more and more enthusiastic about it. It certainly is a work which should be more familiar to the ophthalmologist. A cursory perusal of its pages is not enough to acquaint one with its true value; he may be disturbed because of the occasional page of formidable looking formulae, but close study of each chapter will soon convince anyone of its direct application to everyday practice. The first part of the book leads, by gradual steps, to prepare the

reader for the more elaborate aspects of optics in the later pages, so that one develops knowledge with the unfolding of the subject. The workman soon acquires an understanding of his tools which certainly helps in the application to matter-of-fact problems.

Attention to specific sections is worth while. For instance, the table of varieties of Jena glass on page 484, and Chapter XIII, on the "Optical System of the Eye and Optical Instruments," are of particular interest to the ophthalmologist, as is the ophthalmometer, discussed on pages 696–700.

The only suggestion which the reviewer can offer that might add to the scope of the work is the addition of a section dealing with the evolution of the optical systems of the ophthalmoscope, beginning with Helmholtz, leading up to those of Gullstrand, Friedenwald, and the latest form which uses the whole area of the pupil, both for the illuminating system and the observing system.

Once again the reviewer cannot speak too favorably of this work as a textbook, or at least a reference book for the ophthalmologist.

JOHN N. EVANS, M.D.

EXPERIMENTAL OPTICS. A. Frederick Collins, F.R.A.S. New York: D. Appleton and Company, 1933. 318 p. Ill.

This is a very intriguing little volume which, though apparently written for children, is certainly well worth reading not only by adults in general, but by those interested in various problems dealing with optics. To the young boy contemplating technical studies in this general subject, perusal of this book should be a great stimulus. With the exception of the references to the human eye, the descriptions and illustrations are clear and concise. The experiments are practical and well arranged, and the whole presented in a readable and interesting style. The adviser to Mr. Collins on matters referring to the biological aspects, and particularly to the parts referring to the human eye, was evidently very much behind the times in his conceptions of the subject. For instance, the visual center is referred to only as in the frontal lobe, and the illustrations of the human eye are confusing, particularly in the instance of the retina (fig. 14). The quotation from Helmholtz on page 24 is not only inaccurate but leaves a

wrong impression as to Helmholtz's actual meaning. It is, of course, difficult to present this material briefly and at the same time in language which a child can understand. Nevertheless the reviewer feels that this chapter could be greatly improved. All in all, the book is very much worth while.

JOHN N. EVANS, M.D.

LATERAL DOMINANCE AND VISUAL FUSION. Charles A. Selzer. Cambridge: Harvard University Press, 1933. 119 p.

To the average layman the term dominance seems to be self-explanatory. However, study reveals not only different types arising from heredity or training, but also varying degrees of handedness.

In chapter II the author outlines a series of tests to measure manual dominance itself, besides tests for eyedness and earedness to assist in determining the cerebral basis for handedness.

Case studies of the development of handedness in young children indicated little manual preference among children under one year of age. Watson concluded that the handedness occurring among adults was due to training alone. Baldwin and Wooley found a tendency to call forth the right hand when the child was required to bend its body in the reaching process.

As compared with a very small percentage established by tests of manual dexterity, the results of the eyedness tests, dynamometer tests and thumb-clasping tests, indicate that from one-third to one-half the population are left-dominant.

The writer's investigations of children in the Harvard Growth Study, in the Cambridge schools, and in the Laboratory revealed only one case where a change of handedness was said to have resulted in a mental disturbance.

Mirror-reading, stammering, or other mental disturbance is believed to be the result of a change of handedness only when it tended to develop ambidexterity, or equal function for the right and left motor centers of the brain. Even then, mental confusion would not be likely to result unless a lack of co-ordination existed between the two hemispheres.

Eye muscle imbalance was present in only about nine per cent of the children in the Cambridge schools, and some of these had

visual fusion. All the cases of mirror-reading and stammering had eye muscle imbalance.

Mr. Selzer also investigated the relative mental ability and speed with which the right-dominant and left-dominant read and write. I. Q.'s of four groups of from 500 to 2,500 children indicated that the average I. Q. was slightly higher for right-dominant children. The speed of reading and writing was usually greater from left to right. However, he concludes that the difference between these two groups is insignificant.

In tests for speed of reading the left-eyed group excelled the right-eyed group to such a degree that the author believes the difference is not accidental.

Experiments with the colored-lens test indicated that when one eye was more intensely illuminated than the other, its relative function was not so great. Likewise the eye that was dominant for sighting functioned more of the time than the non-dominant eye. However, if the dominant eye was more intensely illuminated than the non-dominant eye, the non-dominant eye did most of the work.

CONRAD BERENS, M.D.

GOOD EYES FOR LIFE. Olive Grace Henderson and Hugh Grant Rowell, M.D. Appleton Popular Health Series. New York: D. Appleton-Century Company, Inc., 1933. 202 p. Ill.

The foreword of this little volume says that the book is a challenge to parents and teachers; a sort of calling to account because there is a "progressive increase" in the number of school children wearing glasses.

A book purporting to deal with scientific facts—truths—would do well to present such truths, or, at least, to base its general statements on truths. Only on such a foundation is there justification for the existence of such a communication.

The mere fact that glasses are more commonly worn by the young than they were years ago is not evidence that there is a progressive increase of "eyestrain." In fact, the book is full of generalities based on insecure evidence, and this seems unfortunate in view of the great abundance of sound information which is at hand. There is the old quotation about uneducated people having

such keen sight. Of course there is little or no evidence on which to base such a notion. Because you can recognize your mother farther away than someone else can, does not mean that you have keener sight; only that you are more familiar with her peculiarities of figure, gait, etc.

Incomplete development of the eyeball is said to account for poor vision in infants. The farsighted eye is called a flattened eye after the fashion of the Victorian era. Nothing is said of the psychic aspects of vision or of what the normal vision of a child should be at different age periods.

The section on myopia is quite typical of that form of logic used; excerpts are taken from various authors to substantiate the views, but again the foundations for the statements are vague or based only on the "opinion" of someone. The experimental studies on "aniseikonia" are given two pages as if accepted and generally useful. Much space is devoted to the influence of posture on the eyes, and it is this subject with which the authors seem most familiar.

Although a combined committee of ophthalmologists and illuminating engineers could not agree on ideals of lighting, this work sets down definite recipes which one can use with confidence.

Thus, one may proceed with this work, removing the unsubstantiated and insecure, leaving here and there a statement which has some real substance in it.

While the criticisms in this review are destructive, there are features in the volume which are certainly commendable. The method of presentation in some parts of the book is forceful and clear. It holds attention and some illustrations are good. Perhaps these points alone make the work worth while, but the reviewer feels that such a fine opportunity to present truths should not have been perverted by the insertion of antiquated myths and guesses.

JOHN N. EVANS, M.D.

THE EDUCATION OF VISUALLY HANDICAPPED CHILDREN. Ralph Vickers Merry. Cambridge: Harvard University Press, 1933, 243 p. Ill.

This is a useful and a valuable book. Publication in the series, "Harvard Studies in Education," lends a certain aura of importance

to it. But it deserves recognition on its own account, for it is a sincere effort to describe historically, in a small measure and comprehensively as far as present-day conditions go, the provisions both public and private for dealing with the education of children who are blind or whose vision is sufficiently defective to render their schooling a special problem. The work has both the merits and the shortcomings of its character "as a thesis presented in partial fulfillment of the requirements for the degree of Doctor of Education," as announced in the preface. One must admire and approve the conscientious effort of the author to gather together what seems significant in the literature produced in the field of his study, the while he may perforce smile at the conscious display of erudition with its exasperating footnoteitis and at the author's enjoyment of luscious cant words and phrases. Any dissertation prepared for proving one's labors in working for a degree is bound to be hard reading, even if the reader tries with all his might to ignore reference numerals and the horrible footnote which directs him to authorities with volume and page, to *idems* and *op. cits.* galore. But to this author a vote of thanks is due because he has brought together in a summary to each chapter its substance, with nary a footnote to mar the enjoyment of finding out what it's all about.

One may read with pleasure and profit the setting forth of Dr. Merry's studies in these admirably done summaries and come to his final chapter, "Summary and Conclusions," with a fine appreciation both of the material and of the author's skill in presentation of it. Further, the general public will find it most interesting reading if taken thus, while the conscientious student will read the whole book with increasing respect for its writer.

This is a task that needed to be done. No dealing with the subject of what has been done, what is being done, and what the future should provide in the education of the blind and the partially blind in this country has been adequate hitherto. This effort to report upon a study of the whole field deserves the commendation of all interested persons. The book is recommended to administrators and teachers in schools for the blind of every character. If boards of education, boards of administration, state departments of every sort having to do with the proper schooling

of children who are visually handicapped, might read this study and be influenced in generous mood to improve conditions, a better day would be dawning for many a child now inadequately served.

A somewhat critical analysis of the volume's content and appraisal of the author's views which is here attempted is not intended to derogate from the foregoing estimate of appreciation. Dr. Merry covers practically the whole field in his consideration; some parts of the field he has explored better than others. On the subject of "Preschool and Kindergarten Training for Visually Handicapped Children" he accomplishes a sane and well-considered treatment and avoids some of the prejudiced views elsewhere expressed. His dealing with the question of training of blind children in day-school classes as compared with schooling in residential institutions is fair and sufficient for his purpose. Chapter IX on "School Achievement" is interesting and valuable, especially in analyzing aptitudes and capabilities of sightless children. On the subject of the "Evolution of Education" there is evidence of a lack of interest, for a more careful study of the beginnings of education of the blind in America would have produced a more correct picture of the development of the three pioneer schools. It is natural that any author would quote often from Samuel Gridley Howe—a great man who apparently saw the whole problem and spoke, wrote, lived his theories of how to solve it. Dr. Merry, however, passes by the immense contribution of Howe's immediate successor, Michael Anagnos, with but one reference and he gives to William Bell Wait scant attention, though he was the educator before and above the propagandist; in this volume he is apparently only the latter.

Much attention is given, naturally, to measurements of various sorts, applied to intelligence, health problems, personality, and guidance. The author is one who, probably because of his training and for other reasons, places great reliance upon mathematics and mensuration in estimating what someone calls "soul stuff." It is interesting to note, however, that throughout the book such expressions as "should be investigated" and "there is need for investigation" occur many times, leading one to wonder why the writer of this book attempts to settle some moot points; he certainly gives the impression that he is not qualified to utter various

obiter dicta, either from lack of personal knowledge or insufficient means of investigation, and because he has the habit of accepting printed statements and opinions without question of the authority of the writer of them. Further, the author seems not to sense the risk he runs through indulging in constant derogatory criticism of the failures of schools for the blind to measure up to the standards set by himself and his fellow students of psychology; some readers who have confidence still in common sense and practical experience may resent or, on the other hand, view with some degree of amused tolerance, the utterances of a tyro whose field of study of his subject is confined to printed matter and personal observations in a very limited number of residential schools.

In rebuttal, however, of the above inferences let the author himself speak; in his "Preliminary Observations" he says: "Sound opinion, founded upon many years of experience and unprejudiced observation, certainly is preferable to incomplete experimental data obtained by individuals lacking adequate training and experience. While as many reliable experimental data as possible are included in this study, sound observational and opinionative literature, also, are employed."

In dealing with the provisions for the partially blind the author has given most adequate and satisfactory treatment. Here the facts are fully given, the problems well presented, the needs convincingly set forth.

Dr. Merry's book deserves a wide reading.

EDWARD M. VAN CLEVE

Briefer Comment

SEVENTH ANNUAL REPORT OF THE GIZA MEMORIAL OPHTHALMIC LABORATORY, DEPARTMENT OF PUBLIC HEALTH, MINISTRY OF THE INTERIOR, EGYPT. Cairo: Schindler's Press, 1933. 140 p. Ill.

In this report of the scientific work carried on by the Giza Memorial Ophthalmic Laboratory for the year 1932, a section is devoted to the clinical and therapeutic research in the prevention and control of trachoma. The problem of eradication of trachoma and other eye infections is especially difficult in a country where the elementary hygienic standards are still far short of accomplishment.

A CHILD'S GARDEN OF VERSES. Robert Louis Stevenson. A Sight-Saving Book. Cambridge: The Visagraph Institute, Inc., 1933. 117 p. Ill. by Dorothy E. Russell.

An edition of the beloved *Child's Garden of Verses*, in print suitable for use in sight-saving classes, or to be given to the child with serious vision handicap. The illustrations are clear and definite, and have a distinct appeal.

THE EYE, EAR, NOSE AND THROAT, PRACTICAL MEDICINE SERIES, 1933. E. V. L. Brown, M.D., Louis Bothman, M.D., George E. Shambaugh, M.D., Elmer W. Hagens, M.D., and George E. Shambaugh, Jr., M.D., Chicago: The Year Book Publishers, Inc., 1933. 632 p.

Devoting half its pages to the special interests of ophthalmology, this year book is an excellent guide and compendium of literature of ophthalmologic progress. While the abstracts are not all-inclusive, their selection is well considered from the standpoint of the needs of those whose readings are restricted to a few journals.

THE LUCKY LADY. Margaret Prescott Montague. Boston and New York: Houghton Mifflin Company, 1933. 67 p.

The glories of this "brave new world" are described by one to whom partial sight and hearing were restored through the mechanical devices of the machine age. For the person who must face a cataract operation, this book will serve as an excellent pre-operative psychological tonic.

INTERPRETATIONS OF PHYSICAL EDUCATION. VOL. IV, PHYSIOLOGICAL HEALTH. Edited by Jay B. Nash. School of Education Series, New York University. New York: A. S. Barnes and Company, Inc., 1933. 308 p.

A symposium of contributions by twenty-seven specialists in the field of health education. A bibliography of selections on health rounds out the contributed material.

RECORDING AND REPORTING FOR CHILD GUIDANCE CLINICS. Mary Augusta Clark. New York: The Commonwealth Fund Division of Publications, 1930. 151 p.

This system of keeping records and preparing reports has grown out of the practical needs of the child guidance clinic. Its plan provides, however, the essentials of service bookkeeping which are applicable to the needs of other types of agencies.

Contributors to This Issue

Miss Helen J. Coffin, who is supervisor of Braille and sight-saving classes, under the division of special schools of the Cleveland Board of Education, is particularly interested in what happens after school days to sight-saving class children.

Mr. Preston S. Millar is president of the Electrical Testing Laboratories and a director of the National Society; his many professional connections and honors are too numerous to list.

Mr. Lewis H. Carris, managing director of the National Society, needs no introduction to the readers of the REVIEW.

Her wide experience as associate director of the Social Service Department of the Washington University Clinics and Allied Hospitals, in St. Louis, has given **Miss Ruth E. Lewis** authority to outline the special problems of the medical social eye worker.

Among the book reviewers: **Dr. Ellice M. Alger,** professor of ophthalmology at the New York Post Graduate Medical College; **Dr. John N. Evans,** director of research at the Brooklyn Eye and Ear Hospital; **Dr. Conrad Berens,** of the staff of the New York Eye and Ear Infirmary; and **Mr. Edward M. Van Cleve,** principal of the New York Institute for the Education of the Blind, are contributors well known to the readers of the REVIEW.